

Making Sami Seascapes Matter

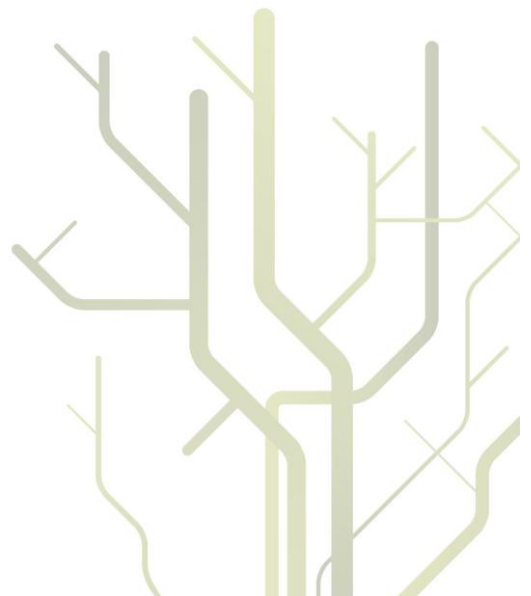
Ethno-ecological governance in coastal Norway



Camilla Brattland

A dissertation for the degree of
Philosophiae Doctor

June 2012





Making Sami Seascapes Matter

Ethno-ecological governance in coastal Norway

Camilla Brattland

A dissertation for the degree of Philosophiae Doctor

2012

Faculty of Biosciences, Fisheries and Economics

Norwegian College of Fishery Science

Center for Sami Studies

University of Tromsø

Acknowledgements

Many deserve thanks for their contributions in making this thesis possible. First of all, it is a result of collaboration with the Coastal Sami Resource Centre in Porsanger and the willing fishers and locals who gave of their time (see list of contributors). Secondly, my supervisor Svein Jentoft guided the project through always stable and wise advice. The Research Council of Norway's program for Sami research funded the thesis project (2009-2012), whereas my new employer the Norwegian Institute of Cultural Heritage Research provided ample framework and time for the final months of the project. The Fávllis Sami fisheries research network at the Center for Sami Studies, University of Tromsø, provided a stable and stimulating framework in which to start and conduct the research. Especially Svanhild Andersen at the Fávllis project was instrumental in introducing me to the Sami fisheries research field. Steinar Nilsen led my work in directions I would not have accomplished alone. The thesis is also a result of my desire to know more about the seascapes I knew from childhood, as well as my political engagement with Sami politics. In Kåfjord, I had the pleasure of working together with Reni Wright on the ethnographic film attached to this thesis. The discussions, literature and experiences gained on the east and west coasts of Canada and with First Nations communities, contributed greatly. Lessons were learned about the importance of methodological rigour gained during the stay with the generous hosts Anthony Davis in Nova Scotia and Barbara Neis and Peter Armitage in Newfoundland. You helped me find my voice. The MARA research group, and especially the girls, at the Norwegian College of Fishery Science, into which I was welcomed in spring 2011, provided another home for my research project. I am grateful to Maiken Bjørkan, Signe Annie Sønvinen, Ann Magnhild Solås, Inga Fløisand, Jahn Petter Johnsen and Einar Eythorsson who read and commented on my writings in various stages of preparation. I am grateful and indebted to Petter Holm, who was a wise and dear partner on the last stretch of the journey. Thanks to Adam Wild for taking control of my language, and to Katri Somby and my other friends for friendship and social support services throughout the project. Lastly, thanks to Marit Myrvoll, the midwife who helped bring the thesis to its conclusion.

Summary

This thesis addresses the lack of knowledge production on impacts of new marine industries on coastal Sami culture in the Norwegian coastal zone. It asks how Sami culture matters in contemporary Norwegian marine governance, and discusses how ecosystem mapping practices facilitate knowledge production on Sami relations and use of the marine environment. This is done through five papers and a film, focusing on the Porsanger and Lyngen fjords in northern Norway, analyzing 1) the characteristics of Sami fisheries and seascapes, 2) how Sami fisheries are enacted through fisheries management and Sami rights mapping practices, and 3) how knowledge is produced about Sami culture and how it is represented in ecosystem governance. What can be observed in the period since 1989 is a diversification and polarization of the coastal small-scale fishing fleet ranging from the very small-scale to the full-fledged industrial coastal fishing vessel. Fisheries governance practices as well as Sami rights mapping practices however tend to enact an image of Sami culture as uniform and having the same needs and challenges independent of social and ecological contexts, which is materialized in universal solutions to the whole population in the Sami settlement area. Current ethno-ecological governance mapping practices offer an image of Sami culture as connected to vulnerable and valuable ethno-ecological spaces to be protected from environmental threats. This materializes ethno-ecological seascapes, but it does little to materialize cultural diversity and multiple knowledge products in the coastal zone. These are mainly the Marine Resource Act (2009), the Nature Diversity Act (2009) and the Planning and Building Act (2008), following the increased political influence of the Sami Parliament through the Consultation Agreement (2005). The thesis identifies alternative local knowledge production practices as remedial actions for improving the knowledge base on how culture and coastal societies are impacted by new industries in the coastal zone.

Contents

Acknowledgements.....	iii
Summary.....	v
List of figures.....	viii
Errata.....	viii
List of contributors.....	ix
List of abbreviations.....	x
List of papers and ethnographic film.....	xi
1. Introduction.....	1
1.1 Research questions.....	3
1.2 Sami seascapes: same, but different.....	7
2. Theoretical perspectives and methodological approach.....	11
2.1 Mapping seascapes.....	11
2.2 Methods.....	14
2.3 Choice and comparison of case study areas.....	16
2.4 Ethical considerations.....	19
2.5 Implications of the research.....	22
3. Summary of papers and film.....	25
4. Discussion of research questions.....	31
4.1 Governing Sami seascapes.....	31
4.1.1 Sami participation in fisheries management after 1989.....	31
4.1.2 Ethnic turn in fisheries rights discourses.....	33
4.1.3 Local turns and ecosystem governance.....	34
4.2 Fishing multiple seascapes.....	38
4.3 Enacting the commons image.....	42
4.4 Local knowledge machineries.....	45
4.5 Blurring boundaries.....	49
4.6 Ethno-ecological governance.....	51
4.7 Implications for future policy and research.....	55
5. Conclusion.....	59
Endnotes.....	62
References.....	66
Paper 1 – 5	
Ethnographic film	

List of figures

Figure 1 Case study areas in northern Norway.....	7
Figure 2 Number of fishers in Porsanger and Kåfjord between 1983 and 2009 engaged with fishing as a primary occupation (B) and secondary occupation (A). Source: Directorate of Fisheries 2012.....	18
Figure 3 Torvald Joramo and Ansgar Hansen trying to fix Torvald's outboard engine.....	30

Errata

Paper 1, page 286: Some of the English translations of the place names in table 2 are not placed in correspondence with their correct name pairs.

List of contributors

Porsanngu - Porsanger:

Roald Wilhelmsen, Smiervuotna/Smørfjord

Ragnar Samuelsen, Billávuotna/ Indre Billefjord

Arnulf Johansen, Anopset

*The Coastal Sami Resource Centre [Sjøsamisk kompetansesenter,
Indre Billefjord, Porsanger]:*

Sigvald Persen and Hartvig Birkely

Gáivoutna/ Kåfjord:

Torvald (Toddis) Joramo, Manndalen

Ansgar Hansen, Manndalen

Wilmar Johnsen, Manndalen

Nils Samuelsen, Birtavarre

Hans-Erik Olsen, Birtavarre

List of abbreviations

- FEK Fishers' ecological knowledge
- IMR Institute of Marine Research
- LEK Local ecological knowledge
- MRA Marine Resources Act [Havressursloven]. In force 1st of January 2009
- NFA Norwegian Fishers' Association [Norges Fiskarlag].
- NMA Nature Management Act [Lov om forvaltning av naturens mangfold (Naturmangfoldsloven)]. Entered into force 19th of June 2009.
- PBA Planning and Building Act [Lov om planlegging og byggesaksbehandling (Plan-og bygningsloven)]. Entered into force 27th of June 2008.
- TEK Traditional ecological knowledge
- SRC Sami Rights Commission. Referring to the second commission (the first established in 1980) to investigate Sami rights to land and water (NOU 2007 13 and 14).

List of papers and ethnographic film

- Paper 1 Brattland, Camilla and Nilsen, Steinar (2011): Reclaiming indigenous seascapes. Sami place names in Norwegian sea charts. In *Journal of Polar Geography* 34 (4).
- Paper 2 Brattland, Camilla (manuscript): Overfishing and cyborgization in Sami fisheries. A case study of the use of traditional knowledge in small-scale fisheries in Porsanger, Norway. Submitted to *Maritime Studies (MAST)*
- Paper 3 Brattland, Camilla (2010): Mapping rights in coastal Sami seascapes. In *Arctic Review of Law and Politics* no. 1 vol. 1
- Paper 4 Brattland, Camilla (in press): Fish farming, politics and monster cod. The production of fishers' knowledge in the coastal zone. Forthcoming in *Acta Borealia* 1/2013.
- Paper 5 Brattland, Camilla (manuscript): Sami fishing grounds and the missing layers of the marine environment. Submitted to *Norsk Geografisk Tidsskrift – Norwegian Journal of Geography*.

Ethnographic film:

Wright, Reni and Brattland, Camilla (2012): Learning hoavda's seascape (10:36 min). Norwegian title: Hoavda og skårungene. Wright kunnskapsformidling and Visual Cultural Studies, Department of Archaeology and Social Anthropology, University of Tromsø.

1. Introduction

This thesis started out with the observation that there are large gaps in the knowledge of impacts on coastal Sami culture from new marine use activities in the coastal zone. Following from this, it would for instance be difficult to assess the impacts on the cultural seascape of the Sami from establishment of new aquaculture locations or other marine activities. In the northern Norwegian tradition, the cultural seascape is seen as constituted by the small-scale fisher-farmer's landscape use as a particular adaptation to ecological niches in the north (Brox 1969; Meløe 1988; 1994; Jones 2008). This seascape is however disappearing. For instance, Maurstad (2002; 2004) points to emerging conflicts between traditional fisheries and fish farming, as well as gaps in the Norwegian Cultural Heritage Act (1978) that only defines cultural heritage in the marine environment as sunken ships. She calls for increased attention to fishers' knowledge of the seascape, and their traditional practices, without which the seascape will turn into an 'uncultured sea' by the threats of new industries and pressures of modernization (ibid.).

It can be argued that the situation is even more critical for Sami cultural seascapes. Sami cultural practices constitute landscapes that widen the conventional Norwegian definition of what a cultural landscape is, including natural elements such as stone formations that were used for offerings in the concept (Jones and Schanche 2004; Jones 2006). Similarly to the cultural seascape in northern Norway in general however, there is a lack of attention to the preservation of these seascapes. The lack of knowledge on the cultural seascape can be compared to missing layers in the GIS (geographical information systems) of the marine environment, a term used by St. Martin and Hall-Arber (2008) for describing how the community is a missing layer in fisheries management. Since there is no management database of important marine landscapes or cultural heritage values in the seascape specifically for Sami culture, the danger is that traditional Sami cultural seascapes will deteriorate or disappear before

they can be documented and managed in a sustainable way.¹

Where are then the most important seascape use areas for Sami communities located, what criteria should be used for defining and documenting such areas, and how should their importance be weighted relative to new and possibly beneficial marine use forms? The knowledge gaps relate just as much to a lack of concrete knowledge about Sami traditional seascape use, as to how such knowledge should be collected. These questions started off the work with this thesis, where use, governance and knowledge production about seascapes in the Sami policy area constitute main themes of research. Compared to research on indigenous land use and occupancy in other Arctic regions such as in Nunavut (Freeman 1976), research in the field of Sami traditional land use studies or resource use mappings in Norway was in short supply, with some exceptions (Kolsrud 1955; Paine 1957).² A majority of the recent research on the marine environment in a Sami indigenous context has been from a social justice and fisheries management perspective, following in the wake of the 1989 cod crises and the establishment of the Sami Parliament as a stakeholder in fisheries management (Jentoft 1998; Nilsen 1998a; Jentoft 2000; Eythórsson 2003; Jentoft 2008). Recent research has to a small degree paid attention to material culture, seascape use practices, and variance across local contexts, with some exceptions (f.i. Paine 1957; Bjørklund 1991; Eythorsson 1993; Andersen 2011). Thus, the initial starting point for this thesis was to investigate the cultural seascape of Sami settlement areas and produce policy relevant knowledge of a character needed for marine use governance processes and other societal questions regarding Sami use of the marine environment. As this thesis will show, these questions are still relevant, although in other ways than originally assumed.

1.1 Research questions

The main research question to be investigated is: how does Sami culture come to matter³ in marine resource governance? This question is both political and empirical, as it asks about the significance of Sami culture in Norwegian marine governance, as well as how Sami culture is materialized through local seascape use practices and governance practices. Since fisheries is the dominating seascape use practice in the areas examined here, the analytical approaches taken in this thesis are drawn mainly from the field of social fisheries research. According to Jentoft, Kooiman and colleagues (2005), governance systems are made up of a governing system and a system-to-be-governed, as well as the interactions between the two (Kooiman et al. 2005). Sami fisheries are generally assumed to be a coherent system to be governed, consisting of Sami fishers, and their connected social-ecological systems.

Governance is a more inclusive and multi-layered term than management. Whereas managers and policy makers act according to a mandate from governments, governance is concerned not only with one sector but integrates multiple sectors and policy areas in ‘the whole of public as well as private interactions taken to solve societal problems and create societal opportunities’ (Kooiman 2005:17). From this perspective, governance of Sami fisheries and seascapes is largely a matter of social organization undertaken to solve societal problems and create opportunities. It is not a one-sided undertaking by the fisheries management system alone, but a joint undertaking in which the state interacts with other actors and stakeholders such as fishers’ organizations, environmental organizations, politicians, industry representatives, and in this case, ethnic minorities.

The starting point for the present investigation is that Sami culture can be materialized in special governable spaces in the marine environment, such as in traditional use areas or fisheries management or local ecosystem zones. The Sami Fisheries Zone that was proposed by the Sami Parliament in 1992, or customary use areas signaling continued historical use over time, could be examples of this possibility. With current turns

toward an ecosystem-based governance regime where the identification and integrated governance of spatial marine use zones is a central principle, it can be hypothesized that this form of governance will facilitate production of specifically Sami governable spaces through ecosystem mapping practices. This presupposes an analytical approach to the study of the Sami seascape as representing ethno-cultural practices and traditions that remain relatively stable over time.

However, it could also be that Sami culture is materialized in other ways, and that culture, as well as the relevance of expressing specifically Sami interests keep changing over time and contexts. To investigate the initial hypothesis, a qualitative investigation of how Sami culture matters in contemporary Norwegian marine governance is therefore required. Consequently, the general research questions to be discussed in section 4, and how they are related to the papers, are as follows:

- 1. What is characteristic of Sami fisheries and seascape use, and how are these enacted through marine governance practices?*
- 2. How is knowledge about Sami culture produced and enacted in ecosystem governance practices?*

These questions are related to the identification of general trends of change in the governance of small-scale fisheries and coastal areas in the period in focus here (ca, 1970 – 2010, with a main emphasis on the period after 1989), namely the recent integration of Sami policy concerns with ecosystem approaches in the Norwegian marine governance system. The problem to be explored through the first research question is whether Sami seascapes constitute one coherent seascape (or system-to-be-governed, meaning Sami communities and the marine environment connected to them) across temporal and spatial contexts. The sub question explores the problem from the opposite perspective, asking how governance practices contribute in materializing specifically Sami seascapes. The second question asks similarly how Sami culture is currently enacted through knowledge production and governance mapping practices following the turn towards ecosystem governance.

The approach taken to research these questions is through investigating how Sami culture is materialized through mapping practices undertaken to make seascapes governable (including actors such as fishers, managers and scientists). Combining critical cartographic perspectives that conceptualise mapping as a problem-solving practice, and governance perspectives that conceptualise governance as practices aimed at solving societal questions (Kooiman et al. 2005), any practice undertaken by resource users or governors to map or otherwise materialize a certain landscape or seascape can be seen as a governance practice. Governance mapping practices are for instance practices aimed at expressing or silencing social interests (Harley 1989), solving a societal problem (Kitchin and Dodge 2007), locating fish in the seascape (paper 5; Ingold 2000), domesticating nature (or culture) (Callon 1986), or making spaces legible and governable (Scott 1998). Especially two contemporary mapping projects have relevance for the focus of the present thesis: land and water customary rights mapping projects in Sami settlement areas,⁴ and marine habitat mappings in the Norwegian coastal zone conducted by the fisheries and environmental authorities,⁵ which both have consequences for the way Sami seascapes are currently governed and how the production of policy relevant knowledge is organized.

These processes changed the course of the thesis from a mission aimed at mapping the Sami cultural seascape to investigating how knowledge production and mapping practices enact (or perform) seascapes as cultural, natural, ethnic, as social-ecological systems, ecosystems, or commons, to name but a few of the multiple seascapes found through the work with this thesis. The goal is to demonstrate that there can be multiple materializations of Sami culture in the marine environment, and that its expressions hold relevance for larger groups in society, and not only as a special group interest. This again has implications for how we think about the role of ethnic groups and other marginal groups in state resource governance, as will be returned to in the conclusion (section 5).

There are five papers attached to this thesis, based on case studies from two fjord systems in northern Norway where Sami culture has been mobilised as part of marine resource governance discourses (see for instance Eythorsson (2008) on Porsanger and Brattland (2005) on the Lyngen fjord). An ethnographic film was made during the course of writing papers 4 and 5 from the Lyngen fjord, which makes it relevant to include as empirical material. The papers are to be read in the order listed in the list of papers and ethnographic film. The two first papers focus primarily on how seascapes are practiced in the period before 1990, while papers 4 and 5 concentrate mostly on recent developments in the organization of knowledge production and governance of the marine environment. Paper 3 is an overview of how Sami customary fishing rights have been and are being mapped in Norway, and also functions as a context for, and bridge between, the papers.

To situate the thesis in its social and local context, a general thematic introduction to the case study areas is first presented in section 1.2. A theoretical and methodological description of the work carried out with the papers is given in section 2, followed by a summary of the papers (section 3). In section 4, a theoretical introduction to the theme is presented, before discussing the research questions. This is achieved through discussing the fishing practices as they were researched through papers 1, 2, 5 and in the film. Section 4.2 discusses the relationship between how Sami seascapes are used and how they are imaged by governors. The second research question is addressed by comparing the findings from papers 2, 4 and 5, asking how the new ecosystem knowledge production and mapping mechanisms materialize Sami culture as social interests, discussed from section 4.4. Section five summarizes the findings, answers the research question and comments on implications for research and governance of what I have termed ethno-ecological seascapes.

1.2 Sami seascapes: same, but different

This section focuses on similarities and differences between the areas in terms of Sami culture and social-ecological fisheries adaptations. The thesis is based on a qualitative case study approach (Yin 2009) focusing on two fjords in northern Norway, the Lyngen fjord in northern Troms County and the Porsanger fjord in Finnmark County. The area covers three municipalities that are part of the administrative area for Sami language⁶, Storfjord, Kåfjord and Porsanger. The main emphasis of the case studies are on the two latter areas (see figure 1). Porsáŋggu – Porsanger municipality hosts 3946 inhabitants (in 2010), most of them settled in the town of Lakselv (at the bottom of the fjord).

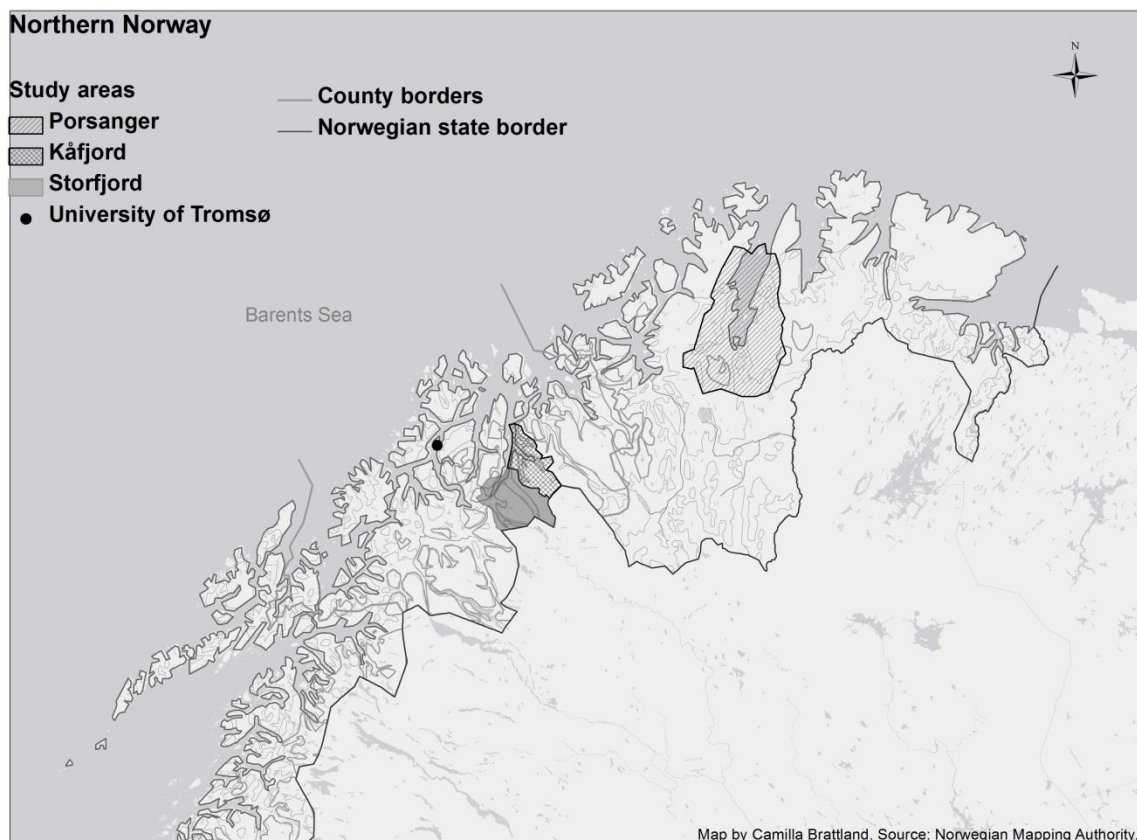


Figure 1 Case study areas in northern Norway

Gáivuotna- Kåfjord hosts 2210 inhabitants spread out in several villages and covers 990 square kilometres against Porsanger's 4873 square kilometres (in 2010), while Storfjord is slightly larger (1542 square kilometres) and hosts 1909 inhabitants (2010) (Statistics Norway). In terms of Sami politics and institutions, both Kåfjord and Porsanger are part of the administrative Sami language area (see endnote 6). According to recent estimations, around 35 % were estimated as Sami language speakers in Porsanger, while around 46 % were estimated as Sami language speakers in Kåfjord, around the turn of the century (St. meld. Nr. 55 (2000-2001) chapter 7). Fishers in the three municipalities have the opportunity to apply for funding for small-scale fishing vessels from the Sami Parliament, and the municipalities host Sami cultural and knowledge institutions such as the Coastal Sami Resource Centre and the Sami newspaper *Sáogat* in Porsanger, Sami and Kven language centers in Storfjord and Kåfjord, as well as the Centre for Northern Peoples and the Riddu Riddu festival in Manndalen (Kåfjord). Local Sami and Norwegian political organizations forming lists of candidates for Sami and Norwegian Parliamentary elections are active in both areas (for the Sami Parliamentary elections after its establishment in 1989).

Porsanger was the site of coastal Sami revitalization in the early 1980s, the first time a local fisheries conflict (the Coastal Sami Uprising) was placed in a Sami context (Nilsen 1998, Eythórsson 2008), while Kåfjord was 'the Sami place' in northern Troms as a site of coastal Sami ethnic revitalization (Hovland 1999), as well as the site of one of the most remarkable fishing cases in Norwegian history with the 1985 Kåfjord Judgement (Rt 1985 p. 247). Both cases involved changing ecological conditions, involving conflicts between small-scale and large-scale vessel groups in the same fjord area, and consequences of hydroelectric development for fjord fisheries (Kåfjord). But whereas the Porsanger uprising (1984 – 1986) had a strong ethno-political dimension, the ethnic dimension in the Kåfjord case was largely constructed as an argument in following Sami fishing rights discourses (Brattland 2005). After 1989 however, Sami culture was strongly associated with the adversary effects of the introduction of the quota regime in 1990 on small-scale fisheries. For instance as expressed through a protest letter written by the fisher Axel Trollvik from inner

Kåfjord, where he appealed to the Sami Parliament for assistance, against what he saw as an unjust fisheries system (Jentoft 1998). In the Sami Parliament's argumentation for a Sami Fisheries Zone after 1990, Porsanger figures as representative of all coastal Sami fishers and fjord areas with the catastrophic consequences of the seal invasion and the negative consequences for small-scale fishers of the criteria for participation in fisheries prior to the introduction of the quota system.

My master's thesis focusing on the Lyngen fjord (Brattland 2005) only scratched the surface of the precursor to the current developments in Sami fisheries policies, through investigating local and political discourses on Sami rights connected to the Lyngen fjord project, the Kåfjord judgement, increasing local conflicts with fish farms from the turn of the century, as well as the Sami Parliament's fisheries policies (ibid.). Ethnic argumentation relative to fjord fisheries is strongly expressed in the two contexts also in the post-1989 period, but in different ways. Where Lyngen has a stronger focus on conflicts with fish farms and local fishers in Lyngen and especially Storfjord (paper 4), Porsanger fishers experience larger ecological changes such as the seal invasions, the disappearance of the coastal cod and the arrival of the king crab. In 2005, the first Sami fishing and hunting association, Bivdi, was founded in Porsanger, and the fjord is central in Sami rights discourses as an example of failed management strategies, leaving behind an 'empty fjord' caused by ecological disaster. In northern Troms however, the seal invasion of the late 1980s was not as evident, and the degree to which Sami culture is activated in local fisheries or marine use discourses is lower than in Finnmark. Despite the different social and ecological conditions however, both places have a history of ethno-political engagement with fisheries politics, which have become representative for Sami fishers in general other fjords in northern Norway. This makes the study of Lyngen and Porsanger interesting, in terms of determining how important local social and different ecological conditions are in making expressions of Sami culture relevant in public discourses on environmental and marine resource governance. This question is returned to in section 4.2, where the first research question is discussed.

2. Theoretical perspectives and methodological approach

This section provides an overview of the methods used in the papers to answer the central research questions. The chosen theoretical and methodological approaches are here presented, before ethical considerations are discussed. Lastly, considerations of implications of this research are made.

The papers encompassed by this thesis contain different research questions aiming at answering different theoretical questions. They treat different substantial areas both theoretically and geographically, and speak to different theoretical propositions in diverse literatures. According to Glaser and Strauss (1977)⁷, substantive theory is concerned with the particular, local case at hand, while formal theory is concerned with the general implications of a case beyond the substantive level. Glaser and Strauss argue that formal theory needs to be developed by comparing multiple substantive areas to ‘take into account all the contingencies and qualifications that will be met in the diverse substantive areas to which it will be applied’ (Glaser and Strauss 1977 [2009]:82). In the papers included in this thesis, theories have been formed at the substantial level of analysis, while comparison of the substantial areas and a more comprehensive picture is developed here. According to Yin (2009), case studies are generalizable to theoretical propositions and not necessarily to populations or universes, i.e. at formal level. The aim is therefore not to generalize the findings of this thesis to a whole group of fishers in Sami municipalities, but to answer to theory.

2.1 Mapping seascapes

All of the papers concentrate on documenting or analysing seascape use and knowledge production in Lyngen and Porsanger. The mapping methods employed in papers 1, 2 and 5 are a combination of methods used to map *use practices* - the ‘map biography method’ (Chapin, Lamb et al. 2005; Tobias 2010) commonly employed in land use and occupancy mapping projects, and methods to collect *knowledge* - particularly local ecological knowledge (LEK) in the fisheries research field (Neis,

Felt et al. 1999; Felt and Neis 2000; Davis and Wagner 2003). Snowball-sampling and career history approaches (Neis et al. 1999), selection of key informants considered especially knowledgeable among their peers (Olsson and Folke 2001) and interviewing elders or active hunters (especially in the Arctic context (Huntington 2000) until a 'saturation point' is reached (Felt 1994) are common approaches in this field.

According to Tobias (2010), land use and occupancy mapping is a term referring to the collection of interview data about traditional use of resources and occupancy of lands by indigenous persons, and the presentation of those data in map form. The basic idea of mapping projects is that people leave traces in the landscape revealing that they have been there. In research on indigenous land use and also in literature on landscape use in general, there are however examples of land use that does not leave any visible evidence, such as narratives (Brody 1983) and toponyms that function as anchors (Basso 1996) in people's mindscapes (Ingold 2000). By using map biography methods, such as harvest surveys, intensity mappings or qualitative long-term studies, these 'invisible' landscapes or seascapes can be made visible. Tobias states that some aspects of traditional ecological knowledge (TEK) can be mapped, while others cannot. This means that maps are an addition to a larger study and functions as a tool in a set of a particular research approach. In the coastal Sami context, such approaches have been utilised to a small extent, with a few exceptions using place names and traditional knowledge as sources of knowledge to seascape use (Bjørklund 1991; Kalstad 2010).

Map-based interviews are also part of FEK and LEK research practices to present aggregated data on larger scales than the knowledge of single fishers (Murray, Neis et al. 2008). In LEK research, the focus is on collecting fishers' observations on ecological events such as the whereabouts and abundance of fish over time, as well as theories about causality between events (Neis and Felt 2000). Mapping using GIS software is one of the increasingly technological approaches to aggregate data and integrate LEK with existing knowledge on the same area in question, as well as organizing and geographically locating interview data through other qualitative

analysis tools such as NVivo⁸, Excel, and others (Murray, Neis et al 2008). In other words, fishers' knowledge is seen as a source of knowledge for mapping both cultural and ecological aspects of seascape use, and it is increasingly communicated through technologies that are easily integrated with existing knowledge databases. St. Martin and colleagues' (2001) 'community mapping at sea' method constitutes another approach that uses existing government data to visualise fishers' seascapes. This means that not only fishers' knowledge but other data sources can be used for visualising human presence in seascapes. Moreover, such maps and the practices used to make them are not only representations of seascapes that are already there, but have effects for instance as a means of generating social change in collaboration with local communities, or in governing ecosystems. The insight into different ways of seascape use mapping from elsewhere (particularly Newfoundland and the Gulf of Maine) as well as the theoretical debates on mapping as representational and performative practices (Kitchin and Dodge 2007) have thus contributed to a broader understanding of the Norwegian mapping practices as well as the practices employed for this thesis and how they could have been done differently.

Paper 1 can be seen as a variation of a land use mapping project, including already collected toponym archives and digital databases as its empirical basis, whereas paper 4 explores the role of fishers' knowledge in coastal zone planning studied through media debates of the so-called 'Storfjord Controversy'. The method employed for studying the way others, such as the fisheries authorities and historical and current geographical surveys, have mapped seascapes in papers 1, 4 and 5, and partly for paper 2, has been inspired by science studies' approaches to analyze knowledge production and relations with TEK and FEK as well as critical cartography (Watson-Veran and Turnbull 1994; Latour 1999; Nadasdy 1999; Ingold 2000; Harley and Laxton 2001; Holm 2003; Haas 2004; Kitchin and Dodge 2007; St Martin and Hall-Arber 2008; Rose-Redwood, Alderman et al. 2010).⁹ By applying a critical look at how researchers conduct their research, and how knowledge production changes the things being studied, this thesis is relevant for the study of the effects of both fishers' and researchers' mapping practices for how the marine environment is understood and

defined. It also has relevance for critically engaging with the way that the fisheries' authorities relate to fishers' knowledge in their mapping practices, as well as the theoretical underpinnings of LEK and TEK research in general.

2.2 Methods

The approach of the Fávllis¹⁰ research project was to collaborate with local Sami institutions in a collaborative research partnership with indigenous communities, inspired by similar projects in Canada (Davis, MacInnes et al. 1991). The collaboration with the Coastal Sami Resource Centre in Porsanger provided the basis for the toponym study in paper 1 and the interviews and field observations for paper 2. The main bulk of the empirical material is based on interviews and conversations with fishers and on literature studies. The research done in both contexts was organized as in-depth, qualitative case studies (Yin 2009) of seascape use among a small group of fishers, analysed in its broader social, ecological and political context. Oral sources have been more important than written sources for the chosen methodology, although historical sources such as statistics and records could have provided a more substantial background for the study and greater temporal depth than the few decades included here. In terms of gender issues, men have been the main focus of the case studies, since they were the most active seascape users in Kåfjord and Porsanger. Gendered seascape use patterns could however be an interesting further research topic in this field.

The purpose of doing interviews was to map people's use of the seascape and interpret this in light of their own reflections and the larger context as found in relevant literature on fishing and seascape use from the same region. The career histories presented in paper 2, and the fishing practices mapped and presented in paper 5 as well as the film benefitted most from the map biography approach (Tobias 2010). Interview data on LEK from the Porsanger interviews were collected and categorized in NVivo, but is used only to a small degree for the present thesis due to the focus on spatial and temporal changes in seascape use. The map biographies for papers 2 and 5, as well as

the toponym study in paper 1 were carried out using a combination of ArcGIS (ver. 9.3) and Google Map software.¹¹ Part of the method used for digitizing the fishers' careers was documented by visual anthropologist Sirkka Seljevold at the Fávllis project (Seljevold 2010). The reader may benefit from viewing the short video 'Mapping Fishers' Activities' here.¹² The final representations in the papers were however completed by graphic artists, as the rather detailed and time-consuming work with the map programs proved unsuitable for the purposes of scientific articles. For the study of how the fisheries authorities and others had collected and digitized fishers' knowledge, knowledge of GIS softwares, as well as critical cartography theories, were essential.

The presence of visual anthropologists at both sites helped both make contact with fishers and create a distance which defined our roles relative to each other. As the visual anthropologist Sirkka Seljevold was already filming fishers in Porsanger for the Fávllis project, I benefitted from her role as a film-maker in making contact with fishers in Porsanger, where I was not familiar from before. In Lyngen, meetings and discussions with fishers and locals were organized by the Center for Northern Peoples in Manndalen, and the collaboration with visual anthropologist Reni Wright on the ethnographic film on fjord fisheries in Kåfjord provided the main material for the study of seascape use for paper 5. In the making of the film 'Learning hoavda's seascape', transcultural cinema as an approach to film making was employed as the main method (Barbash and Taylor 1997; MacDougall and Taylor 1998). This means that we worked out a script of what we wanted to capture in the film before going out with the fishers, and afterwards edited the scenes to tell a coherent narrative. The resulting narrative deviates from what actually happened during field work, and needs to be seen as a construction of the film maker and myself. It is nonetheless instrumental in documenting the particular small-scale fishing adaptation employed by these three fishers. In the perspective of this thesis, it especially serves to contrast this type of fishing adaptation against the Porsanger fisheries (cf Lillevoll 1998 on household adaptations and section 2.3 and 4.2).

2.3 Choice and comparison of case study areas

The choice of Lyngen as a case study area was a natural extension as I already knew the fisheries context through the work with my master thesis (Brattland 2005; Brattland 2009). Through the Fávllis project, the Porsanger fjord was selected as the second case study area. Previous research on coastal Sami fisheries had also focused on these areas, which provided me with a baseline for the study (Lillevoll 1998; Nilsen 1998; Nilsen 1998a). The papers cover both fisheries and seascape use in general (by fishers, fish farms, and fish) in both contexts, although the focus is more on marine use conflicts in general in papers 4 and 5. Although other case study areas could have been chosen, such as a more industrialized fishery in one of the fishing villages on the coast, this would have made the Norwegian-Sami dichotomy more pronounced, which is not the goal of this study.

According to Lillevoll (1998) who studied fjord fisheries in Lyngen in the 1990s, fjord fishers can be roughly divided into four groups, depending on the type of households and fishing adaptations chosen by the fishers during their careers. The first two phases are the recruitment and settling phases, bordering on an expansion phase, where fishers are fully occupied locally and/or away as crew on other boats. The two last phases are the expansion and retirement phase, where fishers fish locally, but gradually retreat into combining part-time fisheries with other income-yielding work or welfare (Lillevoll 1998). A majority of the fishers studied in Kåfjord were in the two last career and household types (reflecting a majority of small-scale fishers in general), while the majority of the fishers in Porsanger were in the first two phases. Both fjords however contain fishers in all groups and who fish with other gear types and in other fisheries, such as shrimp fisheries in Lyngen and king crab in Porsanger.

In terms of numbers of fishers, Kåfjord is special in the sense that there are a larger number of fishers with fishing as a secondary occupation, while the number of primary occupation fishers such as Roald Wilhelmsen is steadily decreasing in Porsanger, and the group of fishers who have fishing as a secondary industry has almost disappeared (see figure 2). Storfjord has not been added to the table since no in-depth study of fjord

fisheries was carried out there, and the case in paper 4 focused on discourses and not on fishing practices. The number of fishers in Storfjord is also only half of the number of fishers in Kåfjord, making fisheries a more marginal occupation than in Kåfjord in terms of the number of fishers (around 10 part time and 10 full time fishers in 2009 compared to 40 fishers in 1987). The introduction of the quota system in 1990 and the cod crises in 1989 (Jentoft 1993; Jentoft and Mikalsen 1994) is reflected most visibly in Kåfjord where it seems that fishers switch from being fully to being part-time fishers¹³, while this is less evident for Porsanger. The fishers Torvald Joramo and his crew (the film and paper 5) are currently fishing together with around 30 part-time fishers in Kåfjord as a whole, while Roald Wilhelmsen (also in the film by Seljevold 2012) is one of around 20 full-time fishers who are mostly concentrated around the only fish delivery station in Smørfjord in Porsanger. In Manndalen in Kåfjord there is a local receiving station that is owned by the fishers themselves, while the fish receiver in Porsanger receives larger amounts of fish and king crabs from both the local fishing fleet and foreign vessels, making delivery and processing opportunities for fishers better in Porsanger than in Kåfjord.

Western Finnmark and northern Troms are different in ecological terms, with cod resources in general being more abundant on the western coast of Finnmark than in the fjords in northern Troms. It is therefore surprising that the number of full-time fishers (figure 2, Porsanger B) has not increased in the same period. This indicates that part-time fishers have not swapped over to fishing on the king crab, either, as Roald Wilhelmsen did (paper 2), but simply left the fisheries. The decreasing trend in Porsanger confirms the image of Porsanger as an ecological disaster, an image that started off projects to bring the fjord back to life through economic development initiatives and scientific research (Sunnanå, pers.comm.; Söderholm 2002).

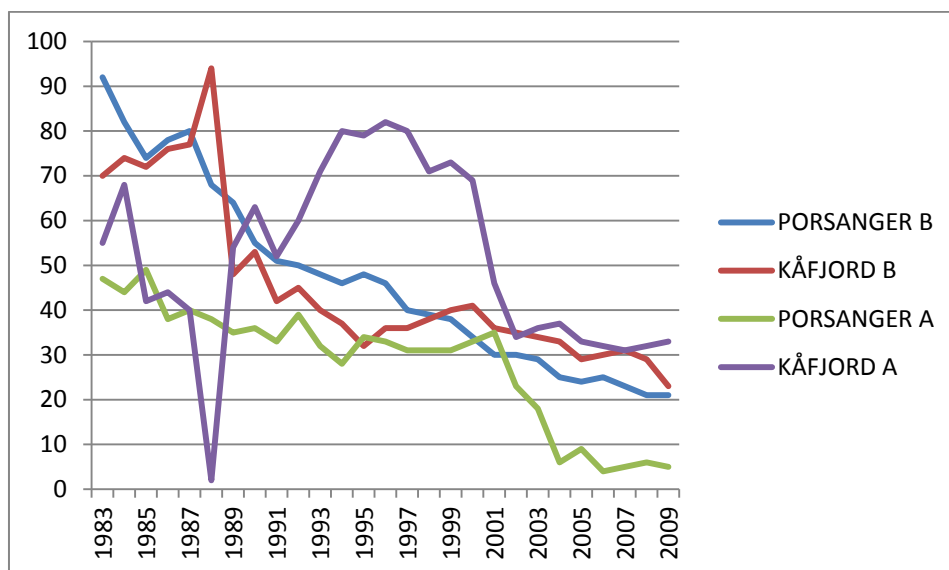


Figure 2 Number of fishers in Porsanger and Kåfjord between 1983 and 2009 engaged with fishing as a primary occupation (B) and secondary occupation (A). Source: Directorate of Fisheries 2012.

These numbers can of course be influenced by a number of factors, such as alternative work opportunities in the municipalities versus the nearby cities and women outmigration issues, or new ways of counting fishers or “cleaning up” the registries by the Directorate of Fisheries. In the period after the cod crises in 1989, the Sami Parliament’s financial support for small-scale fishing vessels in Sami municipalities, as well as the special measures for fishers in Sami areas included in central legislation¹⁴, might be a contributing factor in the preservation of small-scale fjord fisheries such as the one in Kåfjord (see also Hersoug 2005). On the other hand, Lillevoll (1998) found that the number of full-time fishers in Kåfjord in the post-1989 period decreased, despite the financial support for Sami small-scale fishers, indicating that good landing possibilities are more significant for the fjord fishers’ development opportunities than economic support (ibid.) The reduction in the number of fishers despite economic support is however a general trait for all coastal fisheries after 1990, and judging from the long-term development among fjord fishers in Kåfjord, the number of fishers has stabilized on an even level since the mid-1990s (see figure 2). The role of increasing out-migration of women to nearby towns may here be a key explanatory factor for the downturn in community life and fisheries in rural areas in

Finnmark in general. Nilsen (1998) points to this as one of the factors explaining the occupational diversity of Storfjord inhabitants, including fisheries as one of the options, and the more homogenous occupation opportunities in Porsanger in the 1980s (ibid.). The present study largely confirms that these patterns continue to be evident in the two contexts.

The general trend observed here, is that what tends to be seen as a uniform group of fishers, namely the coastal Sami small-scale fjord fishers, contain social, ecological and cultural variations. The differences between the way fishers use the seascape and organize their fishery makes Lyngen and Porsanger more like opposite ends of a scale of possible small-scale fjord fisheries adaptations, instead of being examples of a coastal Sami fishery organized and carried out in similar ways. The choice of fishers included in the case studies to the exclusion of other groups of fishers, may thus constitute a somewhat skewed image of the fisheries in Kåfjord and Porsanger, and the papers must be read in the light of the fact that they are based on a small number of fishers representing only one or two adaptations out of many.

2.4 Ethical considerations

One of the main challenges for ensuring quality in all scientific research is to avoid bias; that is to not allow the interest (conscious or not) of the informant in skewing the information (Alvesson and Sköldberg 2009), or to allow certain points of view to influence the research. On the other hand, cultural sensitivity and closeness to the people being studied versus distance and writing from a colonial perspective is an issue that continues to be very important in anthropology and among indigenous scholars (Smith 2005; Porsanger 2011). In the Sami context, Niemi (2002) warns against what he calls ‘compensatory research’ that can lead the researcher to avoid problematic issues and conflicting perspectives in local communities, as for instance overlooking internal opposition to ethno-political attempts of attributing Sami identity to whole communities. Following Merton’s (1996) ethos of science, the importance of disinterestedness and autonomy of research is therefore even more important for this

kind of research. The starting point for this thesis was created during my period as employed by the Sami Parliament to work with cultural heritage and fisheries issues. My idea was to produce new knowledge about Sami seascape use, a goal that has relevance for the ethno- political context of current debates on the right of the Sami people to land and water. Research results pertaining to the historical seascape use, as for instance from paper 1 on Sami and Norwegian toponyms in Porsanger, could potentially be used as fodder for arguments by Sami political activists, or by Norwegian conservatives, for that matter. The use of this research as advocacy for the recognition of indigenous rights is thus a real possibility (Paine 1990; Kirsch 2002). On the other hand, my knowledge of the Sami society and language, and of Sami ethno-politics through my own experiences and as a result of academic studies at the University of Tromsø (the Master's Program in indigenous studies at the Centre for Sami Studies) provides me as a researcher with advantages in the form of large knowledge base and cultural competence in Sami society that is hard to achieve in other ways. This being said, science is always positioned, always political, never innocent, and even engaged in 'ontological politics' (Law and Urry 2004). Haraway (1988), writing from a feminist perspective, has convincingly made it clear that disinterestedness in research is an illusion, and that it is impossible to attain an objective 'God view' in scientific research. Following Keskitalo (1994) who makes the case that Sami research, and research on the Sami society is always conducted as inter-ethnic relations and that an understanding of the true 'content' of a topic can never be reached, the principles of Mertonian science are further problematized.

Smith (2005), along with Sami scholars such as Porsanger (2011) call for more democratic research practices to make research more socially just relative to indigenous peoples, through employing such principles as benefitting the communities from which the research is drawn, feeding back results, free, prior and informed consent, and local capacity building. This may conflict with the Mertonian principle of communism in research, requiring science to freely share information. This is a thorny issue in the current traditional knowledge management regime, where more and more emphasis is placed on contracts, consent, and control over knowledge.¹⁵ The Fávllis

project has engaged these challenges by collaborating with local Sami institutions and working on publications together with them in order to build local capacity and conduct research in conjunction with local knowledge needs (Andersen 2011). Because of the close collaboration with the local communities, the people who participated in interviews and films are not anonymised, and their full names are given. This is in keeping with current principles of research in indigenous contexts, which acknowledges the personhood of informants as individuals and *árbečeahpit* (traditional knowledge holders) (Guttorm 2011), instead of naming them only as ‘Sami fishers’ which can serve to generalize a whole group of diverse and complex contexts under the same umbrella. The interviews from Porsanger, once transcribed, were given back to the Coastal Sami Resource Centre for their benefit and the films that were made have been reviewed by the participants and community members involved in them. The outputs, such as maps and summaries of the papers and interviews, will be sent to the collaborating centers and given to the main informants and the Norwegian Social Science Data Service when ready.

As regards the possibility of avoiding problematic issues and intentionally or unintentionally avoiding critical perspectives on the societies being studied, I have been attentive to this, not least because I find the politics of how Sami fisheries are represented and imaged to be an interesting research topic in itself. I cannot however guarantee that I have not been influenced by the current political context of the Sami rights debates. This is also connected to ethical concerns with carrying out research on indigenous peoples, which are mainly that the research can serve to stigmatize a whole group of people based on only one or two cases. I have deliberately attempted to discuss problematic issues that tend to be silenced in ethno-political discourses, such as the issue of locals’ complicity in depleting resources (paper 2), collaboration between locals and cartographers on place name collection and sharing of information across ethnic boundaries (paper 1), and the politics and performance of fishers’ knowledge in fish farm conflicts (paper 4) and in spatial planning processes (paper 5). Perhaps my previous experiences and knowledge about fishing grounds have influenced the research topic and choice of methods more than my role as an insider in

the Sami society. In keeping with a current turn towards acknowledging the influence of the things around us (Latour 1993; Olsen 2010), my ‘inside’ position relative to the local fishing grounds in Kåfjord is also a possible bias in my research. Because I knew some of the fishing grounds in Kåfjord, I had previous experience with small-scale fisheries. Through the work with mapping practices in the context of paper 5 and the video documentary, other representations and mappings of the same seascapes are however addressed.

2.5 Implications of the research

In this section, I reflect on the implications of the research and the choice of theoretical approaches used in the papers. The main implication of the use of theoretical and methodological approaches from this thesis is the possible influence of the research itself in society. This is an issue of how research practices themselves are performative and have effects on society instead of just reflecting it. Law and Urry (2004) state that social science research tends to enact and reproduce nineteenth-century, nation-state-based realities and politics. Taking method seriously as enacting social realities rather than just representing it, means that we as social scientists need to ‘re-imagine’ the realities we want to produce, the methods we are using, and ourselves, if we are to work productively in the twenty-first century ‘where social relations appear increasingly complex, elusive, ephemeral, and unpredictable’ (Law and Urry 2004:390). Social research can in this way be seen as engaging in ‘ontological politics’ (ibid.) The theoretical approaches taken in the first papers can be criticized for engaging in ontological politics, since the papers may well tend to produce a certain picture of reality. The role of this thesis in reflecting on Sami seascapes as one of the images of Norwegian marine governance may serve to enact that image in the future in unprecedented ways, as also commented on earlier in this section.

The choice of theories and limited case study area can also contribute to a one-sided description of Sami fisheries. However, I have sought to remedy this by including theories and perspectives that conflict with each other. This is particularly evident in

the tension between research on LEK and mapping practices in papers 1, 2 and 5 (Neis and Felt 2000; Neis, Murray et al. 2008; Tobias 2010), as opposed to research on how scientific and local knowledge are produced, investigating fishers' own and management mapping practices in papers 4 and 5 (Latour 1999; Holm 2003; Cash and Clark (2002); Haas 2004; Kitchin and Dodge 2007; Ingold 2000). These different approaches are commented and reflected upon during the discussion of the research questions in section 4.

Where Law and Urry (2004) calls for 'messy' social research methods to capture 'complexity, the solution from my point of view has also been to focus on counter-images as ways of filling out and critiquing hegemonic images that already reproduced nineteenth-century or other outmoded images of reality. What counts as outmoded, however, depends upon the viewer, and the relative point at which 'reality' is observed. Some of the most hegemonic images in Norwegian-Sami fisheries relations may also originate from the Sami society, thus making Sami counter-political images objects of critical analysis as well. The last papers have opened up for a less ideological and more multifaceted view of reality, where I have attempted to reach new ways of coming to terms with old images and ethnic boundaries. The differences between the two local contexts and my different engagement with the communities on which the empirical material is based, have also contributed to the development of theoretical standpoints as the papers were written and explored relative to each other. Also, the methods in these papers have attempted to bring new order and increased understanding to situations that seemed both messy (the Storfjord controversy in paper 4) and 'fixed' (the mapping of biodiversity areas in paper 5) through bringing in different perspectives. Seeing things in a new light may well be as effective as seeing the complexity and fluidity of situations. This thesis contrasts old images with new ones, and sort out some of the messy issues in research on Sami society, politics, and fisheries.

3. Summary of papers and film

The paper 'Reclaiming indigenous seascapes' (paper 1) uses toponyms collected by the Norwegian geographical survey and a local database on marine toponyms to research mapping of Sami marine presence in the Porsanger fjord. Seen together with the registered marine toponyms in Norwegian, Sami or modified forms in the National Place Name Registry, the local database revealed toponymic silencing (Helander 2009) of Sami place names and thus cultural presence in the marine environment. Marine place names in pure Sami, Norwegian and mixed forms were analyzed in six categories and placed in a GIS (geographical information system) to analyze the geographical distribution of the categories in the seascape. From conceiving of the seascape in terms of a 'colonial' or 'contested' landscape with two opposing user groups, other relations than the Sami-Norwegian dichotomist categories emerged. Over time, the main lines of conflict and cooperation changed to run between vessel and gear groups, where Norwegian language was associated with commercial fisheries and modern fish-finding technology. The paper therefore argues that indigenous place name research needs to pay more attention not only to 'silenced' names (Harley and Laxton 2001; Rose-Redwood et al. 2010), but also to the hybrid products of ethnic relations and colonization processes. With the increasing pressure on resources in the Arctic, the state might yet again in the future find it interesting to silence or give voice to indigenous place names in marine space as a sign of human presence.

Paper 2, 'Overfishing and cyborgization in Sami fisheries' is located in a context of dramatic social-ecological change and resource depletion of coastal cod in the Porsanger fjord. The paper follows the fishing careers of three local fishers, and investigates the contribution of small-scale fishers' increasing fishing effort to the decline and disappearance of local coastal cod stocks. Theoretically, the paper speaks to the tendency to romanticize traditional, small-scale fishers (and especially Sami fishers) as wise stewards of local resources (organic fishers) versus the theory of fishers as caught by a process of increasing cyborgization that turns them into

machines (Johnsen, Holm et al. 2009). In the paper, mechanization among small-scale fishers in Porsanger is analysed through their changing spatial use of the fjord and their fish-finding methods, using the marine toponyms from paper 1 as a baseline for investigating temporal and spatial change in local fishing practices. Three fishers' careers are mapped and discussed in terms of spatial, temporal and ecological intensification and expansion (Neis and Kean 2003), and the roles of old and new technologies and mechanization in their fishing careers are discussed. In conclusion, the finding is that small-scale fishers in Porsanger contributed to the decline of local cod stocks in conjunction with the fishing pressure of other gear groups, despite their own concern for the local fish stocks and efforts to conserve the fjord from overfishing. Fishers in the new cybernetic mode of fisheries organization need other types of knowledge where knowledge of machines and digital equipment is more important for finding fish than being able to read the seascape and find fish using traditional knowledge. On the other hand, fishers are able to draw on previous experiences with overfishing and reflect on their past experiences as harmful to the local cod stocks, which makes them capable of both resource conservation and overfishing.

'Mapping rights in coastal Sami seascapes' (paper 3) is an analysis of knowledge production and approaches to produce knowledge about local seascapes by the Coastal Fishing Commission (NOU 2008:5) and the Sami Rights Commission (NOU 2007:13 and 14) reports. It gives an overview of the fishing rights context and points out knowledge gaps and research needs for future research on fishing rights and ownership relations in a Sami context. Both commissions proposed thorough rights identification and mapping process of existing private and collective rights to marine resources. Where the Coastal Fishing Commission only proposed a mapping process of these kinds of rights, in addition to recognizing a historical customary use of the Finnmark fjords by the Sami, the Sami Rights Commission produced a framework for thinking about customary marine use connected to cod spawning grounds. It also documented local customary use of fishing grounds through interviews with fishers and identifying central fishing and spawning grounds for local fishers in ethnically mixed fjords or

where Sami were historically in the majority. Paper 3 argues that more research needs to be done on the customary use of seascape, and proposes a mapping process where local knowledge is collected in collaboration with communities.

'Fish farming, politics and monster cod' (paper 4) analyzes how fishers' knowledge was produced as credible, legitimate and salient knowledge by the fisheries authorities in the so-called Storfjord Controversy. Compared to how fisher's knowledge is treated discursively in other cases, the paper links the successful integration of fishers' knowledge to emerging scientific and political opposition to cod farming in Norway. The Storfjord Controversy involved a conflict between fjord fishers and the cod farming industry, where fishers claimed that cod farming was detrimental to wild cod fisheries. The paper analyses how fishers' ecological knowledge (FEK) was collected by the fisheries authorities and integrated in an ecosystem knowledge database, and the fishers' knowledge claims were transformed into facts. Despite questions about the credibility of the FEK by the cod farmers, local politicians and others, in this case it worked to the benefit of the fishers themselves in their conflict with the cod farms. The paper relates to discussions about the 'integration project' (Felt and Neis 2000; Soto 2006) and concentrates on how the integrated FEK products were perceived by opposing groups of fishers and farmers as well as scientists and policy-makers as credible, legitimate and salient information (Cash and Clark 2002). FEK was accepted by opposing groups when it was verified by a third party, namely science, and when fishers themselves were perceived as separate from the knowledge product presented by the fisheries authorities. By constructing marine spaces that were governable in the aquaculture regulations framework, conflicts between cod farms and cod spawning grounds were avoided. The paper argues, however, that the FEK integration process constructed FEK as if all fishers hold the same knowledge and the same opinions. Since FEK was removed from fishers' control through its production as facts that represent all fishers' knowledge, it can be appropriated and used as a political bargaining chip. By introducing a diversity of fishers' knowledge producers, this situation can be remedied at the same time as local competence is built up. This has transfer value also for how knowledge could be produced in future FEK integration

projects relative to management of wild salmon.

Paper 5, titled 'Sami customs, marine research, and other seascape mapping practices', follows four different mapping practices of the same local seascape. The paper speaks to the theory that marine environment mappings are poorly understood as expressions of community interest, missing a 'community layer' (St. Martin and Hall-Arber 2008). The paper discusses whether mapping practices aimed at producing biodiversity areas are also able to express community interests in the marine environment, and how community interests are understood. The mappings undertaken by the Directorate of Fisheries, the Institute of Marine Research and the Sami Rights Commission were compared with local fishers' mapping practices. The paper illustrates how the mapping practices produce four different spaces with differing spatial extent and attributes. Although some of the methods and definitions used in the different mapping practices were the same, they ultimately resulted in different objects in the marine environment, depending on the questions asked from the outset and the construction of the spatial problem to be solved. However, their governance as the material basis for Sami culture is not dependent upon their mapping as either customary use areas or biodiversity, also making cod spawning grounds and fishing areas highly relevant as the natural basis for Sami culture. Biophysical layers in the GIS of the marine environment can thus be activated as 'community layers' (cf St. Martin and Hall-Arber) independent of the purpose of the mapping practices undertaken to produce them. The implication of this finding is that how expressions of community interest, and how they are expected to look, needs rethinking.

The film 'Learning hoavda's seascape' (10:36 min.) was made as one in a series of films about coastal Sami culture, to be used for teaching in primary and secondary schools. In this thesis, it exemplifies one out of multiple fjord fishers' adaptations in contemporary northern Norway. The film follows three fishers from Manndalen in Gáivuotna - Kåfjord, Troms, during one day in the end of March, 2009. The eldest fisher, Torvald (Toddis) Joramo, is growing too old to go to sea alone, and two men from his village are joining him at sea (Ansgar Hansen and Wilmar Johnsen). Neither of them are full-time fishers, and they pursue cod fishing only in the winter fishing season. The narrating voice of Ansgar Hansen in the local Gáivuotna Sami dialect tells the story of how 'hoavda' (the boss) has taught them landmarks, and how to set the gill nets in order to catch cod. The film documents the relationships among the fishers as well as the fjord gill net fishery from small, open vessels. It is especially referred to as part of the discussion in section 4.2.



Figure 3 Torvald Joramo and Ansgar Hansen trying to fix Torvald's outboard engine.

4. Discussion of research questions

The main research question to be discussed in the following sections is how Sami culture matters in Norwegian marine governance. This is answered through a discussion of the papers, but first a general overview of the relevance of Sami culture in the marine governance system is needed. The description shows how concern for Sami culture has been integrated in legislation and fisheries and ecosystem management practices in the post-1989 period. This has happened particularly through the Sami Parliament's increasing political influence through participation in the fisheries governance system since 1991, and the new procedures for consultation and working relations between the Sami Parliament and the Norwegian ministries (the 2005 Consultation Agreement). Lastly, developments beyond the fisheries sector are described to indicate the direction in which governance of Sami seascapes is changing.

4.1 Governing Sami seascapes

4.1.1 Sami participation in fisheries management after 1989

Before 1990, Sami fishers were not organized through any nation-wide institutions, but constituted a marginalized, 'pariah caste' group of fishers on the radical 'left wing' of Norwegian fisheries politics, with the Norwegian Fishers' Association (NFA) as its main opponent (Eythórsson 2003). With the establishment of the Sami Parliament in 1989, however, Sami fisheries became a management system to be intentionally managed. The legitimacy for inclusion of Sami fisheries in the national fisheries management sector was established during the 1980s by the Sami ethno-political movement and by strong criticism against the existing fisheries governance system. One of the main criticisms against the existing system, which had proved to be a failure with the 1989 cod crises (Jentoft 1993; Jentoft 1998), was the failure to recognise and manage local cod stocks as separate stocks that returned every year to traditional spawning grounds in fjords all along the Norwegian coast. The coastal cod

is important in Norwegian fisheries management firstly as a threatened species¹⁶ in Norwegian fisheries and marine biodiversity policy, and secondly, as the most central ‘material basis’ and symbol for the threatened coastal Sami culture. It has been termed a ‘paper fish’¹⁷, an ‘invisible cod (Maurstad and Sundet 1998), and an artefact subject to political constructions that influenced its management (Holm, Rånes and Hersoug 1998). Especially the overfishing of local stocks of cod was a contentious issue causing conflict between small-scale fishers that fished on the local stocks in traditional Sami areas, and Danish seine vessels that were accused of fishing them all up in a few sweeps on the fjords. This led to a mismanagement of local resources. Moreover, fjord fishers who had fished little in the years preceding the implementation of the quota system in 1990, due to fluctuating resources and seal invasions, were affected adversely by not gaining access to the new system. When the Sami Parliament raised fisheries as their first issue in 1989, the Ministry of Fisheries was taken by surprise (Davis and Jentoft 2001).

The criticism from the Sami Parliament, Sami fishers, and the northern Norwegian public did not go without remedial action by the Ministry of Fisheries. The concept ‘material basis for culture’ gained a foothold in the Sami fisheries discourse during the 1990s as the dominating approach to thinking about Sami fishing rights (Smith 1990). The Sami Parliament first participated in national fisheries governance in 1991, with political participation on the Advisory Board for Fisheries Regulations (Reguleringsrådet), together with stakeholders from commercial organizations and fishers’ organizations (Sami Parliament 2004). In 1992, it proposed the establishment of measures such as a Sami Fisheries Zone to remedy the adversary effects of the fisheries management system on Sami small-scale fisheries. In a co-management framework, this can be seen as the beginning of a cooperative phase between the Sami Parliament and the fisheries authorities where mutual learning and formulation of separate and common policies started to take place between the actors. As an important material basis for the coastal Sami culture, the protection of coastal cod spawning grounds and sustainable management of inshore and fjord fisheries is therefore politically contentious. Integrating local ecological knowledge about

spawning grounds and coastal cod with the scientific knowledge about coastal cod has recently become a solution for sustainable management of coastal cod, as well as increasing the influence of the Sami Parliament in fisheries governance.

4.1.2 Ethnic turn in fisheries rights discourses

In the period between 1990 and 2005, Sami fishing rights were investigated through specially appointed committees and by two Sami Rights Committee reports (published in 1997 and 2007) established to clarify the governance of Sami rights to land and water in general. Mutual learning took place through the work on various committees, but the interaction between the institutions suffered from old conceptions of Sami culture in Norwegian bureaucracy. For instance, during the process leading up to the new Marine Resource Act, the committee that proposed the Act would not recognize Sami historical fishing rights due to the fact that the Sami did not uphold a traditional fishery, but ‘participates in the fishery with modern vessels and modern effective fishing gear’ (NOU 2005:10 ch. 3.2). Likewise, the negative response of the General Attorney to the Coastal Fishing Commission’s (NOU 2008:5) law proposals for recognizing the historical fishing rights of the Finnmark people was along the same lines of thinking (Smith 2010). Since 2005 however, the way in which the Norwegian government works to solve Sami rights questions has developed radically, compared with the 1990s. With the 2005 Consultation Agreement,¹⁸ the Sami Parliament could raise issues directly with the Ministry of Fisheries and have a direct influence on fisheries regulations at the highest political level, thereby decreasing the potential for decisions based on flawed conceptions of Sami cultural preconditions.

Sami fishing rights have also, since 2005 increasingly entered national fisheries discourses through what can be called an ‘ethnic turn’ in fisheries discourses.¹⁹ This turn means an expansion of the relevance of Sami rights to include all fjord fishers in the northern parts of Norway as potential benefactors of Sami management measures. When the Coastal Fishing Committee, which had been established to investigate Sami fishing rights, launched its report in 2008 (NOU 2008:5), and the Ministry of Fisheries

launched its response to the legislative proposals, the scope of the Sami fishing rights debate was expanded to include all fishers in Finnmark regardless of ethnicity (Smith 2010). The ethnic turn brought little in terms of historical fishing rights, but expanded some of the measures that were originally proposed only for Finnmark, to northern Troms and the municipalities in Troms and Nordland Counties that were included in the Sami administrative area. After consultations between the Sami Parliament and the Ministry of Fisheries and Coastal Affairs, there was a compromise that essentially continued present fisheries policies, but cemented the right to fish in the so-called open group, to which an additional quota of 3000 tons to conventional fishing vessels (below 11 meters) in the Sami administrative area was allocated (Ministry of Fisheries and Coastal Affairs 2011).²⁰ Through these latest changes, the Ministry and the Sami Parliament seem to have developed routines for managing the ‘aboriginal challenge’ (Hersoug 2005) of Norwegian fisheries.

The solution in the post-1989 period has been to create special regulatory measures developed to protect fisheries as the basis for coastal Sami culture. Since these rules are applied universally within Sami municipalities, they have come to encompass large parts of northern Norway and are applied not only to Sami fishers but to Norwegian small-scale fishers as well. With the new consultation procedures and the principle that Sami fishing rights apply to all fishers in a geographical region regardless of ethnicity, the political influence of the Sami Parliament in management of small-scale fisheries in northern Norway is larger than ever before. So far, however, the claim that there exist special Sami fishing rights remains unresolved due to opposition from the NFA and the government, who do not see the basis for, and the utility of, recognizing Sami historical rights in the fishery (Jentoft and Brattland 2011; Ministry of Fisheries and Coastal Affairs 2012).

4.1.3 Local turns and ecosystem governance

The Sami fisheries discourse has largely been about Sami fisheries as a uniform group of fishers, and to a small degree about the different needs and challenges of particular communities or regions. During the last few years, however, a development can be

witnessed where attention to spatial planning in specific local contexts, is increasing. This has happened through the application of environmental governance approaches and integration of Sami rights principles to the environmental sector. Since 1989, the previously open coastal commons has been increasingly closed and privatized (Hersoug 2005), not least as a result of increased aquaculture production. This has changed the understanding of the seascape as a commons into a seascape consisting of production areas, activity zones, and ecosystem components.

Recent international and national governance and legislative changes influence the emergence of a Sami marine governance system. International policy guidelines and legislation increasingly expect resource management to be sustainable and socially just. This pertains to both fisheries rights as human rights and to the collection and production of knowledge. Integration of non-scientific knowledge forms with scientific knowledge is pronounced as an ideal goal in policy documents, conventions²¹ and legislation worldwide, and is promoted as a way of ensuring social justice in policies.²² Through international instruments, the signatory states are required to develop national strategies for conservation and sustainable use of biological diversity. Since the turn of the century, these principles have taken hold in Norwegian marine governance. In Norway the legislative changes and management practices affecting marine governance in the Sami policy area in focus here are particularly the Nature Management Act (NMA 2009), the Marine Resources Act (MRA 2009), and the Planning and Building Act (PBA 2008). The idea of preserving marine biodiversity through an ecosystem-based approach to fisheries management (EAFM) is implemented through the Marine Resources Act (2009).²³ Consultation with stakeholders and inclusion of fisher's knowledge are also part of this approach. The reason why environmental and spatial planning legislation is included here is because these tools together form an integrated set of ecosystem governance practices that have direct application at the local level and incorporate structures for managing Sami marine resources as the material basis for Sami culture.

With the new Marine Resources Act, the fish as a management object is not as central

as the ecosystem. This development has been termed the “greening” of Norwegian fisheries legislation (Henriksen 2010), mirrored by an environmental turn in Norwegian ecosystem governance approaches in general (Knol 2010) which requires a more holistic approach to management than before. Together with this development, Sami culture has become formalized as one of the components of ecosystems that must be governed relative to other marine use forms, such as tourist fishery and research quotas.²⁴

The expansion of marine governance to include not only fisheries but ecosystems also involves the expansion of the knowledge base for management decisions. The NMA, section 8, states that decisions made under sectoral legislation (including the marine sector) affecting nature diversity shall, as far as possible, build on scientific knowledge. However, decisions shall also include ‘knowledge based on generations’ experiences through use of and interaction with nature, including such Sami use, which can contribute to sustainable use and conservation of nature diversity’.²⁵ Moreover, Section 7 of the MRA institutes a special mandate for marine resource governance, when it requires that ‘management measures shall contribute to secure the material basis for coastal Sami culture’.²⁶

The PBA requires all municipalities to develop spatial and regulatory plans that show the connection between future societal development and current spatial use in the municipality including sea areas out to 1 nautical mile from shore. Spatial plans identify for which purposes areas are to be used, and for the coastal zone a few broad categories or zones are to be designated, including traffic, navigational routes, fisheries, aquaculture, and nature areas (§ § 11- 6 and 7). The Sami Parliament as a planning authority can intervene on municipal spatial and regulatory plans in all issues of special significance for Sami culture and commerce (§ 5-4). This is an expansion of the Sami Parliament’s mandate in spatial planning processes resulting from the consultations between the Sami Parliament and the Ministry of Environment that preceded the PBA (which in June 2008 replaced the old PBA from 1985). These legislative changes were also supported by the official Sami Rights Commission

(SRC) (in NOU 2007: 13 and 14). Previously, the Sami Parliament could only object to spatial plans involving Sami cultural heritage (Cultural Heritage Act 1978), which limited the range of issues on which the Sami Parliament could act to culture in the conventional sense. For instance, there were no structures for intervening with aquaculture development in certain municipalities, even though Sami Parliament politicians had strong opinions about it and could bring weighty arguments to bear. With the new legislative changes, the Sami Parliament is able to legally interfere with the local municipalities' organization of marine activities and management measures on the local level. Since management measures now pertain to all living marine resources and not only fisheries, this also implies that the 'material basis for coastal Sami culture' is also expanded to include the total marine environment and not only fish stocks and fisheries.

A central instrument in the new approaches to municipal planning is the production of updated, publically available base maps and maps showing spatial use zones for the decision making process (PBA § 2-1). In the marine sector, the Directorate of Fisheries, the Directorate for Nature Management and the Institute of Marine Research (IMR) have the main responsibility for producing data about marine biodiversity and marine use through the national marine habitat mapping program (Directorate for Nature Management 2007). The Sami Parliament does not have direct management responsibilities in the marine sector, and it does not have a mandate to do research on marine resources in the Sami administrative area. It has, however, developed its own guide for spatial planning in Sami policy areas, including marine areas, where it is stated that 'fishing places and spawning grounds of significance for fishing in Sami coastal and fjord areas' are to be protected (Sami Parliament 2010). As a result of recent conflicts between cod fisheries as a central Sami commerce and cod farming (see paper 4), this pertains specifically to conflict with cod farms, which is a general precaution taken in the national aquaculture regulations (Ministry of Fisheries and Coastal Affairs 2004, changed in 2010). Together, these regulations indicate that municipalities should take special care to protect cod spawning areas and fishing areas as the material basis for culture in the Sami administrative area.

Following these developments, how are these new governance practices affecting the materialization of Sami culture in marine governance, and how is its relevance changing? These are the questions that set the stage for the following discussion of the research questions identified in the introduction.

4.2 Fishing multiple seascapes

The first research question pertains to what is characteristic of Sami seascapes as a system to be governed. Do Sami fishing practices have some common characteristics shared across contexts, and in that case, which characteristics are these? Or is it the other way around, meaning that Sami fishing practices are enacted by governance systems? This is discussed through investigating fishers' seascape use practices in Lyngen and Porsanger, as well as how Sami culture is treated in governance mapping practices. The discussion is particularly based on papers 1, 2, 5 and the film focusing on a comparison between Kåfjord and Porsanger.

The theory of increasing cyborgization in fisheries by Johnsen and colleagues (2009) introduced in paper 2 is central for the purposes of this discussion. It illustrates how fisheries in the North Atlantic have changed from being organised in organic associations between fishers, vessels, and the resource, to being organised in increasingly cybernetic networks. Increasing complexity in the relations between fishers and fish, as well as in the fisheries management system, is in this perspective the variable that governs transitions from organic, to mechanistic, to cybernetic modes of fishery organizations. Whereas the cyborgization approach narrates a story where fishers are almost bound to change, Sami fisheries tends to be associated with more 'organic' relations with nature.

In terms of technological complexity versus organic relations, the Kåfjord fishery described in local fishers' mapping practices in paper 5 and in the film can initially serve to illustrate a traditional, 'organic' fishery conducted with close relations between fishers, fish and vessels, compared to the more 'cybernetic' Porsanger fishery.

Upon closer examination, what is organic and what is mechanic and cybernetic are however relative. Whereas the Kåfjord fishery may seem like a traditional, unchanging fishery relative to the Porsanger fishery, it is more mechanized compared to, for instance, recreational fisheries. The Kåfjord fishers are similarly to the Porsanger fishers also inscribed in complex fisheries management networks. Ansgar compares the oldest fisher, Toddis to a machine in the film: ‘He himself is the echo sounder, GPS and everything else’, reveals an acknowledgement of the old man, as well as of the machines and their advantages. Without large investments in fishing gear and technology, the fishers are nonetheless dependent upon making outboard motors function, to mend fishing nets, and on the gill net haulers (see figure 3). The reader will benefit from viewing the films made by visual anthropologist Sirkka Seljevold capturing the Porsanger fishery adaptations (Seljevold 2012), which are quite different from that of Kåfjord as represented through this film.²⁷

But the Kåfjord fishery doesn’t quite conform to a fishery that is bound to change into fish-killing machineries either. Toddis has previously employed echo sounders and fished with larger vessels, but has retreated to the simple, small-scale fjord fishery because that is what suits him best in his present life-situation. This corresponds to the typical career pattern of fishers in this area where these fishers can be sorted in the fourth household adaptation that Lillevoll (1998) identified (see also section 2.3). In this context, the ecological conditions of the fjord are also relevant. In Kåfjord, the seascape and the fish is probably just as available with the landmark system as with digital technology, and the balance between fishing with local knowledge or investing in machines is a conscious choice made by the fishers themselves. The same can be said of Porsanger, where more than in Lyngen those choices were dependent on the dwindling ecological resources. As regards ecological conditions, Porsanger and Kåfjord are similar in the sense that there are spawning grounds for cod in the inner parts of the fjord. Where the coastal cod disappeared from the innermost fishing grounds in Porsanger already in the beginning of the 1980s however, it did not completely disappear from Kåfjord, although it has decreased (papers 2 and 5). The disappearance of the coastal cod in Porsanger is documented in the absence of the

innermost fishing grounds in Porsanger from the Directorate of Fisheries' marine mappings (paper 2), whereas fishers in Kåfjord did not note any absences or 'dead' spawning grounds in the Directorates' mappings in Kåfjord or Storfjord (papers 4 and 5). The different ecological conditions of Kåfjord and Porsanger and the availability of other work occupations in addition to fisheries also play central roles in deciding the degree to which fishers are able to make use of financial support measures. In Porsanger where the coastal cod largely disappeared in the mid- 1990s, only the most industrialized adaptations made continued settlement as fishers in Porsanger possible, facilitated by the increased range of the fishing vessels and the presence of cod in open coast areas. The ecological contexts also facilitated fishers' different use of fish-finding and mapping practices suited to the social-ecological conditions of each system.

The way seascapes are known through the traditional landmark system is a possible candidate for shared characteristics between Kåfjord (paper 5) and Porsanger (paper 1 and 2). However, when comparing the use of the landmark system and contemporary fish-finding technology between Kåfjord and Porsanger, it becomes evident that fishers relate to different seascapes and that the choice of technological solutions is not independent of the ecological contexts in which they are used. Compared to Porsanger, the fishing grounds in the narrow seascape of Kåfjord do not play such a large role as in the large Porsanger seascape. The Porsanger fishers, such as Roald's father (paper 2) used place names that contain landmarks and bottom-describing features to find fish and navigate in the wide seascape. In the broad Porsanger seascape where mobile fishers go after resources in nearby areas, fisheries are currently characterized by effective harvesting concentrated to a few commercial fishers, concentrating fishing on a few species and spatial expansion to coastal fishing areas. Use of digital sea charts, echo sounders and radars are a dominant way to navigate and find fish in the seascape. Where fishers used to ask where in the landscape they should set the gear using landmarks, experience and place names, mapping to find fish is increasingly about locating virtual representations of fish in digital sea charts. This is also what is described for fisheries in the process of cyborgization (Johnsen et al. 2009). Following

Ingold (2000), both the landmark system and the GIS can be seen as mapping practices. The difference between the two does not necessarily rely on differences between modern and traditional practices and degrees of complexity, but that one of the mapping practices employs a spatial representation of the seascape to navigate, whereas the other does not. The advantage of the landmark system is that it is functional when digital technologies break down, and it can be transferred across languages and ethnic boundaries as the mixed toponyms in the case of Porsanger show (paper 1).

There is, however, a fundamental difference in the effects of the use of new technology. The fisher Roald pointed out in the case of Porsanger (paper 2) that with the new and efficient gill nets and the echo sounders that could 'see' the sea bottom, they discovered that there were also fish on the bottom, and not only on the fishing grounds. The landmark system was adapted to a technology that did not utilize the deepest sea areas, and where navigation relative to shallow grounds and deep areas were central. With GPS technology and more efficient fishing gear, knowledge about how the seascape looked increased, and knowing the location of fishing grounds became outmoded knowledge when fish could be found anywhere in the seascape. Thus, the principle process that makes place names fall out of use is not a result of modern threats to traditional seascape use (Maurstad 2004), or the introduction of new technology in itself, but the way that technology creates new practices of materialization. This means that fishers enact different seascapes through their practices, depending on which material things the fishers are assembled together with. The question is thus not whether Sami fisheries are traditional or have disappeared due to cyborgization, but what adaptations fishers themselves practice as the most appropriate solution to their current situations.

In general, the fishing practices investigated in the two different contexts have few unifying characteristics to constitute a coherent Sami fishery, at least in the post-1989 period. Sami fisheries are not one object with one representation, which stay together across space and time, and across social contexts. Although both Kåfjord and Lyngen

here represent Sami small-scale fisheries, the two cases show great variation in practices, adaptations, mechanization, ecological conditions and individual choices among fishers. Even though some of the elements of the two fjord fisheries in Porsanger and Kåfjord are the same in the post-1989 period, they are constituted by diverse practices ranging from the very small-scale to the full-fledged industrial coastal fishing vessel. What can be observed is a diversification and polarization of the small-scale fishing fleet. Compared to the ongoing changes in the Norwegian fishing fleet at large, what characterizes Sami fisheries is a large span between diverse fjord fisheries adaptations, both between and within municipalities. The assumption that there is a Sami seascape constituted by stable ethno-cultural fishing practices can thus be rejected.

4.3 Enacting the commons image

Having illustrated that Sami seascapes consist of diverse and multifaceted fishing practices assembled in various ways relative to different ecological and social conditions, how is it then being enacted by governance practices? The hypothesis formed in the introduction was that Sami culture is enacted as materializations of those aspects which are specific to the Sami culture, which is discussed here. What is seen as specific to Sami culture by governors however needs to be regarded as the result of certain images. The images of the noble savage, matched by counter-images of indigenous peoples as fallen angels, are for instance persistent images in environmental management (Berkes 1999; Kalland 2003). In the fisheries sector, Sami fisheries are associated with certain images, such as the image of the traditional, organic fishery that is conducted according to fixed and unchanging customary practices. Governance images, Jentoft and colleagues (2010) explain, are the perceptions that governors have of the system-to-be-governed. Images can be changed through experience and mutual learning, but they influence the way governors think about and act upon fisheries as social and natural systems. Put simply, images are set into motion by governance practices such as legislation or regulatory measures in the interaction between the governing system and the system-to-be-governed (Kooiman et

al. 2005). Although images are mere conceptual representations and can be defined differently, they are nonetheless real in their effects and consequences, says Jentoft and colleagues (2010). The ‘performativity’ of images (the extent to which they are believed to be true) thus influences the outcome and makes them become self-fulfilling, such as the image of the ‘tragedy of the commons’ (Hardin 1968).

The commons image is a central image in the minds of governors in the fisheries sector. Before 1990 there were virtually no limitations on fishers’ catches in the cod fisheries, as fishing was conducted under an open access regime. Fisheries was imagined as conducted in a large commons (Hersoug 2005), where the Sami were absent as a group of fishers, and there was only one large mass of cod. Maurstad (1992; Maurstad 1997) and Jentoft (2000) point out how the governing system’s image of the commons actually enacts the ‘tragedy of the commons’ scenario inherent in the image of the fisheries commons and becomes a self-fulfilling prophecy, instead of preventing it (Jentoft and Chuenpagdee 2009). The lack of knowledge of Sami culture made Sami fishers as a group invisible in the eyes of the state, and the lack of knowledge of local coastal cod stocks gave no grounds for regulating local fisheries relative to what was perceived as fishing pressure on a single stock of cod (Maurstad and Sundet 1998). The Porsanger fishers’ changing seascape practices before and after 1990 tell the story about how fishers enact the state’s fisheries governance image as a commons open for exploitation. As argued in paper 2, this serves to nuance the image of small-scale fishers as enacting a resource conservation ‘peasant’ rationality, and thereby make small-scale fishers free of responsibility for their own influence on local resources. For the Porsanger fishers, the seascape as a commons led to a conflict between the fishers’ concern with their own contribution to overfishing, and the drive towards individual benefit from the fjord fishery.

In terms of political opportunities, the difference between 1984 when fjord fishers in Porsanger protested against overfishing of local cod stocks, and the post-1989 period, is that whereas both Sami concerns and small-scale fishers’ concerns in general were silenced before 1990, they now have the opportunity to express themselves through

legitimate channels such as the Sami Parliament, Bivdi and the Coastal Fishers' Association. These institutions, together with the emerging customs for how the Ministry of Fisheries and Coastal Affairs is dealing with Sami issues (see section 4.1.2) however tend to represent Sami fisheries in the fisheries rights discourse as a uniform group of small-scale fishers. This is especially evident in rights discourses, which may again lead to further materialization of an image of Sami fisheries as conducted according to fixed practices instead of the flexible and dynamic aspects, upon which opportunities for innovation and change are dependent.

As paper 3 illustrates, individual rights and collective rights are seen as tied to fixed areas such as fishing grounds and delimited fjord areas. In Sami fishing rights discourses, the 'material basis' for cultural rights protection is separated into two rights aspects: the right to the fish resource, which is regulated by public acts and regulations, and private and collective property rights to fishing grounds or defined fjord areas 'established through usage from time immemorial or custom' (Brattland 2010:35; NOU 2008:5 p. 373). Sami use of seascape as characterized by the customary use of cod spawning grounds and nearby fjord and fishing areas is seen as constitutive of rights. However, as shown by fishers' use practices in papers 2 and 5, seascape use by fjord fishers is both concentrated on delimited fishing grounds *and* mobile at the same time, due to the importance of being able to follow the fish to other fjords.

Local seascape practices are thus conducted in multiple ways, moving between fixed fishing grounds and larger areas, even though the management practices draw local practices as immobile and large polygons or as fixed points and lines. The mapping of fisheries as conducted according to relatively fixed practices and within bounded polygons, as discussed in papers 3 and 5, is therefore a result of the governors' intent. Also, the maps produced for papers 1, 2 and 5 depicting fishing practices as fixed to named fishing grounds (paper 1) or more mobile (papers 2 and 5) do not necessarily reflect a historical or cultural development, but rather my own intent to represent those particular aspects of fishers' practices. The multiple mapping practices that represent

fisheries as either fixed or flexible need not be correct or wrong, but they are reflections of dominating approaches and ways of finding solutions to social questions. The consequence of this is that both fisheries governance practices and Sami rights mapping practices tend to perform coastal Sami culture as if it is the same across contexts. This is reflected in the universal solutions implemented by the Ministry of Fisheries and Coastal Affairs since 1990, where support for small-scale vessels and part-time fishers in the Sami administrative area have been the main approach.

4.4 Local knowledge machineries

The final question to be discussed is how local knowledge about Sami seascapes is produced, and how Sami culture matters in current ecosystem governance. This section is based on the cases and findings of papers 4 and 5 in particular, focusing on the introduction of fish farming and marine habitat mappings in the marine environment of the Lyngen fjord. As stated in section 4.1.3, the ecosystem approach to management has shifted the focus from being focused on fisheries only, to ecosystems and governance of multiple marine use forms where fisheries are only one of them. Knowledge production for the purposes of materializing ecosystems is characterized by increasing attention to local ecological conditions and an integration of fishers' knowledge in marine resource management, out of which Sami knowledge is also to be included (NMA 2008). In the current ecosystem-based approach to marine governance, marine mapping practices make ecological resources legible (Scott 1998) and controllable through mapping and materializing them in calculable protection zones or management zones (see also Knol 2010). By doing this, governors are not only representing ecosystems that are already there, but enacting them. Is Sami culture being materialized in specifically Sami ecosystem components, as hypothesised in the introduction, or does it matter in other ways in this new approach to marine governance?

Fishers' knowledge production practices are not in focus here since fishers seldom aim at constituting Sami seascapes through their practices. However, knowledge

production for the purposes of materializing ecosystems is currently characterized by an influx of the use of local knowledge concepts such as traditional knowledge, local ecological knowledge, and experience based knowledge in marine resource management, implying an epistemological difference between scientific and local knowledge. As papers 4 and 5 illustrate, local knowledge in general is collected as fishers' spatial information on ecological phenomena such as cod spawning behavior that can be integrated and stored in GIS databases. In paper 4, the knowledge collection process by the fisheries authorities is described as a process that produces 'facts out of FEK'. As knowledge producing processes, mapping practices can be seen as epistemic machineries (Knorr-Cetina 1999) that produce spatial answers to questions such as 'where is the fish' or 'where is the place where fish are usually caught'. Paper 4 takes the approach that all knowledges are partial and embedded in local cultures and practices.²⁸ Coupled with the 'spatial turn' in fisheries management towards local ecological conditions in ecosystems (St. Martin and Hall-Arber 2008), fishers are becoming not only resource users but increasingly also knowledge providers in what can be thought of as regulatory²⁹ ecosystem knowledge machineries.

In this regime, local knowledge emerges as usable knowledge (Haas 2004), because it can provide credible and salient information on the environment, and also because it increases the legitimacy of the authorities (paper 4). Since scientists are the ones producing the most credible, legitimate and salient knowledge about the marine ecosystem, fishers are however reliant on alliances with politicians or other actors if their agendas are not supported by the collected fishers' knowledge (paper 4). Combined with the present political support for research on biodiversity and the protection of biodiversity 'also as a basis for Sami culture' (NMA 2008), this development favors those who have an interest in making fishers' knowledge confirm the existence of local cod spawning grounds. As indicated in paper 4, there is no guarantee that fishers will always agree with the knowledge collected about local spawning grounds, or with their significance. Thus, the way mapping practices are representing spawning areas as if they are true reflections of what is already there may answer the fisheries managers' questions, but they are not universal answers to

everyone's questions.

Compared to the period before 1990 when almost no knowledge was produced about fjord ecology or Sami customary use, this can be characterized as a 'local turn' in the way knowledge about local realities is being produced by marine scientists and Sami institutions alike. As illustrated by paper 4 and the Storfjord controversy, where fishers' knowledge used to be ignored, it has now become a central player in conflicts between fisheries and aquaculture activities. Where fjord conservation used to be dismissed and the whereabouts of cod spawning grounds ignored in order to keep the commons open for all fishers, they are now more relevant than ever. As papers 4 and 5 illustrate, although Sami seascape use is not intentionally collected by the national marine biodiversity program, mapped cod spawning grounds, based on both scientific and fishers' information, are made relevant in public discourses and for Sami organizations through conflicts with fish farming (paper 4). The most direct link between fishing grounds as the basis for Sami culture and their relevance for spatial marine planning is the case of the Alta coastal zone plan (paper 5).³⁰

The data collection level is however not where Sami culture is materialized, and Sami culture is seldom materialized in specifically Sami areas, such as customary use zones. The question is whether Sami culture is enacted as something else, and whether it is materialized as ecosystem components. The seascapes that have been mapped in Lyngen and Porsanger largely enact seascapes as natural ecosystems. This means that there is no specific collection of knowledge on the human dimension of the marine environment, as discussed in paper 5. The new local knowledge machineries do not separate between knowledge as belonging to a specific culture, whether scientist, Sami or Norwegian. Rather, it is *ecological* knowledge in general, produced by local observers or by external observers (scientists), which is collected and then made relevant for Sami marine governance after it has been produced and spatially organized. Since Sami policies are integrated with general governance structures, knowledge does not need to be specifically Sami in order to provide the basis for governance arrangements designed to protect Sami culture. Rather, the production of

seascapes that are especially' important as the basis for Sami culture' is happening in the initial or final stages of the governance chain, through the involvement of Sami institutions (the Sami Parliament), knowledge claims raised by Sami political actors or fishers' associations in Sami areas (paper 4 and 5), or Sami knowledge producing processes (the Sami Rights Commission). This means that Sami culture is increasingly understood as related to the conservation of some biodiversities (cod) in whatever area they are abundant, and not necessarily to fixed fishing grounds.

However, this happened in only a few instances, out of which only one had material effects on governance practices. Firstly, paper 5 describes how the Sami Rights Commission's (SRC) mapping practices are producing marine spaces that document the presence of Sami customary and current use areas. The knowledge collection and production methods are the same as the ones used to produce knowledge about cod spawning grounds, but their utilization in governance networks and the meaning ascribed to the same marine spaces are different. One and the same area can thus be both spawning ground and customary use area, but the areas which were mapped by the SRC are currently governed only as fishing areas. Secondly, the fishing areas that were mapped in the Alta municipality were expanded in the municipal spatial plan relative to aquaculture zones partly because of their importance for Sami culture, after pressure from a local fishers' association that represented Sami fishers, and the Sami Parliament. This means that even though 'ethnic' governance mechanisms and instruments are in place in the governance system, they need to be activated by interested actors to be put into effect. Thus, it is mainly with the intervention of Sami institutions that Sami culture is enacted as biodiversity through ecosystem knowledge machineries.

4.5 Blurring boundaries

After having discussed the research questions relative to the papers, the implications of the findings are discussed here. As discussed in section 4.2, seascape use practices in traditional Sami areas are characterized by increasing diversification in the range of adaptations available for small-scale fjord fishers. The discussion has highlighted fishing practices as enacting multiple seascapes. Fisheries governance practices, however, tend to be based on the image of Sami fisheries as traditional, small-scale and ‘organic’ (as opposed to cybernetic), making this particular adaptation the target of management measures and fishing rights acknowledgements (see also section 4.1.2). As a seascape enacted by small-scale fishers in traditional Sami settlement areas, Sami seascapes as constituted by Sami culture exclusively are first and foremost held together by the management practices and governance images used to manage these areas. The governance image of Sami fisheries as traditional, small-scale and ‘organic’, supported by the Sami Parliament’s production of Sami fisheries as a counter-image in Norwegian fisheries management (see section 4.1.1), to a certain degree serves to maintain fishers’ opportunities to conduct this type of fishery adaptation.

However, with the marine spatial planning and ecosystem approaches to marine governance and its integration of ethnic policies, Sami institutions, scientists, fishers and managers, Sami interests are made relevant as an extra significant layer on top of marine biodiversity or fishing areas to be activated in marine use conflicts or alliances. Whereas the borders between Sami fisheries and other sectors are imagined to run along the lines of Sami versus Norwegian, and marginalization of Sami interests in the state’s fisheries management system, Sami interests and knowledge claims are currently mobilized in power struggles fought on other levels. As papers 4 and 5 show, arguments pertaining to the ‘material basis for Sami culture’ and Sami associations’ arguments in fish farm conflicts are supported by branches of the fisheries and

environmental authorities in ways that do not conform with the role of Sami fishers as a homogenous group of victimized and marginalized fishers.

Where spawning grounds, eel grass beds, and fishing areas digitized from map-based interviews with fishers are presented as layers of marine biodiversity, they could just as well be social layers of land use and occupancy zones and the lived experiences of fishers in the seascape, representing the presence of the nearby communities. The result is indeed a mapped 'ethno-ecological' as opposed to a Sami ethno-cultural seascape. This is far from how one normally thinks about Sami seascapes as a cultural seascape, but not very surprising, considering that the distinction between cultural and natural landscapes is largely constructed. This is one of the most debated issues in the field of geography, where most researchers now agree that this distinction is constructed by the human eye. Thus, the seascape (as an open category denoting neither cultural nor natural attributes) does not have to be cultural to express a Sami identity. It could just as well be a Sami natural seascape, or an ethno-ecological seascape. The discourses around aquaculture, overfishing, ecological changes, fisheries governance, and other discourses including the argument that these are threats to Sami culture, may in this light be interpreted as a response not only to environmental threats, but also to a particular identity:

When particular landscapes are seen as the physical product of particular forms of resource use and are made to represent the identity of a nation or region, then perceived environmental threats to these landscapes implicitly come to be presented as threats to national or regional identity. In this way, the values and interests of particular groups in society are presented as general values and interests of society as a whole (Jones 2008:284).

As argued in section 4.1.2, there is an ethnic turn in Norwegian fisheries discourses where it can be argued that some of the interests of the Sami as a minority in Norwegian society have started to be presented as general values held by the society at large. Based on these discussions, what I will call ethno-ecological governance practices are emerging, where Sami interests are expressed as part of general social actions taken against environmental threats (see section 4.6). These practices materialize the Sami interests that are compatible with the interests of other social

groups, such as some scientists, small scale fishers and others who ally themselves at the same side of environmental conflicts. In contrast to the integration of these interests with each other, the Sami interests that pertain to the Sami people as an indigenous group, are however not supported to the same degree, such as the recognition of the Sami people's historical fishing rights. In the case of the Maori of New Zealand for instance, national recognition of historical fishing rights led to the ownership of a share of the national fishing quota (Hersoug 2008), but in the Sami situation there is no recognition of a Sami title to the foreshore or sea bed (Toki 2010). In order to share fishing rights with others, primary recognition of historical rights is however imperative, as analysed by Toki (ibid.). The next section will discuss more closely the possible reasons for the current development in Norway.

4.6 Ethno-ecological governance

One of the reasons for the facilitation of Sami ethnicity in environmental governance, and not in fisheries governance, could be that there is still a perceived boundary between Sami fisheries as a coherent system to be governed, and Norwegian fisheries, which makes the basis for political recognition of specifically Sami rights weaker. As indicated earlier however, Sami fishing rights now have relevance for larger groups of fishers, and fisheries governance practices are changing, even though these changes are not felt very strongly yet in northern Norway. The integration of diverse policy areas to converge in spatial management is a general trend in European integrated governance practices. According to Van Tatenhove and others (2011), the state is no longer the sole actor in marine governance regimes, but interest groups, pressure groups, firms, citizens and other non-state actors are now entering the arena of policy-making (Van Tatenhove 2011). Stakeholder groups and state actors are thus seen as co-governors, which mean that the role of the state is shifting, but not necessarily shrinking (Kooiman et al. 2005). Assuming that these changes are also effecting Sami-Norwegian relations, with the political influence of the Sami Parliament and the integration of Sami policy concerns in marine governance, the boundaries between Sami fisheries as a stable system-to-be-governed, and the Norwegian governing

system, are becoming increasingly blurred. Norway, however, is the sole country in Europe who has implemented ethnic rights in resource management legislation to the extent documented in this thesis. With the new legislative changes, the previously separate Sami political sector has become increasingly integrated with Norwegian policies. In current integrated marine governance, concern with the material basis for Sami culture is incorporated in all of the different converging sector policies, as expressed in the Marine Resources Act, the Planning and Building Act, and the Nature Management Act. Moreover, where claims such as the age-old character of fishers' knowledge and the importance of local cod stocks were previously argued by Sami fishers, they are now official policy, at least in the context of cod farming in Norwegian/Sami fjords. The premise of Sami communities and marine areas as a separate system-to-be-governed, can thus be abandoned. Rather, the undertakings of the governance systems can be interpreted more in terms of a system where Sami policies are nested within fisheries and environmental governance, enacting ethno-ecological systems to be governed.

The implication of this is that rather than thinking of Sami fisheries as being in opposition to Norwegian fisheries management, these recent developments indicate that ethnic groups are more accurately thought of as integrated in coalitions that organize themselves relative to environmental issues in ethno-ecological assemblages.³¹ Parajuli (1996; 2004) describes similar developments in India, connected to conflicts over environmental issues, as the emergence of 'ecological ethnicities'. Healey (2009) describes ethno-ecological identities as key to understanding dominant political alliances in the Bolivia of Evo Morales (*ibid.*). See also Escobar (1998) on the development of political ecological strategies by social movements in Latin America through the use of biodiversity discourses. Included in the concept of ethno-ecological identities are not only indigenous groups, but 'any group of people who derive their livelihood through day-to-day negotiation with their immediate environment' (Parajuli 2004:236, see also Healy 2009). In the northern Norwegian context, this would encompass people in coastal communities in general, including, but not exclusive to, the Sami people. Groups of fishers and other actors in

northern Norway, constituted by both Sami and Norwegians, are in this perspective joined together through expressions of a common ecological ethnicity. Other ethnicities³² can also be imagined, such as technological or economic ethnicities, which is outside of the purposes of the present discussion. To widen this concept to include not only human-environment relationships, the term assemblage (Irwin and Michael 2003) is here more fitting to describe the present development.

One of the reasons why cod farming became so contested was because of the perceived environmental threat to local cod stocks, as well as the appearance of the farmed 'monster cod' (paper 4). 'Group 1' that was formed relative to the monster cod controversy in paper 4, which included Sami organizations, some newspapers, political parties, branches of the Directorate of Fisheries, and a majority of the small-scale fishers in Storfjord, is an example of such ethno-ecological assemblages. Researchers inspired by actor-network perspectives such as Olsen (2010) and Johnsen and colleagues (2009) would argue that also non-human actors such as vessels, cod, and echo sounders are part of such assemblages. In this case, it could be argued that the coastal cod, digitized cod spawning grounds, GIS software, biodiversity, FEK, cod farms and other actors are also part of such opposing or collaborative assemblages. As regards the role of Sami culture in such assemblages, the point is that a whole group can come to express interests that are expressed as belonging to a particular ethnic group, even though that ethnic group consists of individuals holding a range of opinions, knowledges and beliefs.

In the case of recognition of Sami fishing rights, there are presently no environmental threats to create similar vertical alliances between fishers, politicians and managers. The historian Henry Minde (2003) observed that such alliances arose in support of the recognition of Sami land rights in the wake of the Alta affair in the early 1980s, and that this event marked the end of old power structures in the Norwegian bureaucratic system through a 'silent revolution' (see endnote 4). When it comes to recognition of Sami rights, things are different, partly because of unequal power relations, but also because Sami rights are seen as tied to the ethnic group, even though the

implementation of Sami rights is practiced otherwise and attributed to the Sami administrative area (Ministry of Fisheries and Coastal Affairs 2011). The development illustrated here seems to strengthen the environmental governance sector, in which the Sami Parliament is also included as a central actor through the Consultation Agreement and other developing co-management structures. Interestingly, the Sami Parliament, with the 2005 Consultation Agreement is in a more powerful position as representative of small-scale fishers' interests in large parts of northern Norway than the fishers' associations. This was facilitated by the initial ethno-political activism of the 1980s, turning towards what can be called an increasingly ethno-ecological governance system after the turn of the century. Thereby, much of the grounds for critique against the centralized, state-ruled governing system have vanished since the governance system has changed to integrate parts of the system to be governed in new centralized governance structures. At the same time, political opposition is increasingly directed towards multinational industries such as the aquaculture industry and more recently the mining industry, which are expanding their activities in the warming climate of the north. What are the implications of the developments described here for future policy and research practices?

4.7 Implications for future policy and research

General trends in environmental governance witness an increased attention to sustainable management through principles such as the precautionary approach, ecosystem-based management and inclusion of stakeholders and local knowledge, at the same time as pressure on the marine environment is increasing from new industries and commercial fisheries. The growth of global industries and global economies into previously open resource commons has resulted in a global movement, particularly in developing countries, to ensure resource access, rights, and a focus on poverty alleviation and food security (Jentoft, Eide et al. 2011; Onyango 2011). Increased attention to ensuring economic, social and ecological sustainability in small-scale fisheries is also reflected in the recent United Nations' Food and Agriculture Organization's (FAO) voluntary code of conduct for sustainable small-scale fisheries (FAO 2011). In Norway, some of these global trends are currently making themselves evident. Integration of local knowledge and other environmental governance principles have facilitated conservation of culturally important marine areas relative to the developing aquaculture industry's need for marine space. However, through this movement, stakeholders are included not as culturally diverse groups of people, but as represented by collective bodies of local knowledge that enact knowledge holders as uniform groups of people and uniform ethnic groups (see section 4.2 to 4.4). The emerging Sami-Norwegian marine governance system practices the environment not as important for Sami culture because it has cultural value in itself, but as a 'natural basis' that has value independent of human cultural practices. It can be argued that the development so far has facilitated the emergence of multiple local biodiversities, but less cultural and social diversity.

Mol (2006) argues that developments in today's modern society (the Information Age or 'second modernity') challenges social science to rethink the role of knowledge and information in dealing with environmental challenges. Inequalities and monopolies in

information, as well as unequal access to the production of knowledge (as for instance through GIS programs) and access to environmental knowledge are ‘becoming key resources in power struggles around informational governance’ (Mol 2006:511). The drawback in the current situation as documented by this thesis is that the Directorate of Fisheries and the IMR are the only certified knowledge producers for ethno-ecological governance purposes, thereby creating few opportunities for alternative mappings undertaken from other perspectives, such as community mappings or Sami counter-mappings. Paper 4 also raises the point that there is no local knowledge production with mapping of salmon habitats comparable to the mapping processes undertaken relative to cod habitats. This puts identification of points of conflict between wild salmon and other marine use forms at a disadvantage. Moreover, even though other knowledge producers are capable of producing alternative mappings, it may not be in a form that is compatible with governance mapping practices, or even salient to the governance system. For instance, the Coastal Sami Resource Centre in Porsanger is developing a database where they are registering the historical harvest areas of households in Porsanger. When mappings are undertaken by ‘centers of calculation’ (Latour 1999; Nadasdy 1999) such as the fisheries authorities, however, these mappings go largely unnoticed because they have not been translated into environmental information or data that can be integrated with the current management systems. In a centralized governance regime such as the Norwegian, local lack of access to, and integration in, local knowledge machineries may widen the digital divide between centers of calculation and local institutions, providing little mutual learning and interaction to change existing governance images.

When local knowledge is produced by centralized institutions, it also runs the risk of being represented as the knowledge of a whole group of people, instead of partial knowledge, as argued in paper 4. Participation in the production of local knowledge, not only in providing information, but also in producing it and participating in how it is to be used, are good governance principles that would benefit all parties, after the slogan ‘knowledge sharing is power’ (Bennett and Bennett 2004). To realize that the new production of local knowledge can be seen as part of the workings of marine

governance as a knowledge organization, would perhaps facilitate a move away from the enactment of Sami culture as uniform and traditional in fisheries governance and rights mapping processes, and enact more diverse and complex realities. Therefore, to match the increasing production of local environmental knowledge, increasing local production of ecological, cultural, and other knowledge forms is needed to remedy knowledge gaps and create diverse opportunities for societal development. Through the ethno-ecological governance structure already in place, much is already accomplished, but more local capacity building is needed to accomplish increased diversity in these respects.

5. Conclusion

This thesis started with the observation that there are gaps in the knowledge of impacts on coastal Sami culture from new marine use activities in the Norwegian coastal zone. It then asked how Sami culture matters in contemporary Norwegian marine governance, and set out to research 1) the characteristics of Sami fisheries and seascapes, 2) how Sami culture is enacted in marine governance, and 3) how knowledge is produced about Sami culture and how it is represented in ecosystem governance. The hypothesis was that Sami culture is materialized as specifically Sami governable spaces or use zones, and that this is facilitated through ecosystem governance. This presupposed an analytical approach to the study of the Sami seascape as constituted by ethno-cultural practices and traditions that remain relatively stable over time. During the course of this thesis, the research questions have been discussed relative to mainly two case study areas in the Lyngen and Porsanger fjords in northern Norway as examples of Sami seascapes. The findings can be summarized as follows:

- The observation that there are knowledge gaps and missing layers was made possible because of already emerging governance and knowledge production practices that made the lack of knowledge on cultural presence and diversity in environmental governance visible. These emerging ethno-ecological governance practices are the result of integration of concern for Sami culture and local knowledge in central legal instruments. These are mainly the Marine Resource Act (2009), the Nature Diversity Act (2009) and the Planning and Building Act (2008), following the increased political influence of the Sami Parliament through the Consultation Agreement (2005).

- The characteristics of Sami fishing and seascape use practices are constituted by diverse practices which are adapted to different social and ecological conditions. What can be observed in the period since 1989 is a diversification and polarization of the coastal small-scale fishing fleet ranging from the very small-scale to the full-fledged industrial coastal fishing vessel. Fishers are also enacting multiple seascapes through their traditional and technological mapping practices, which vary in application with varying ecological contexts. This is exemplified through discussions of how the landmark system and echo sounders are used in the broad Porsanger seascape and the narrower seascape of Lyngen. The assumption that there is one Sami seascape constituted by stable ethno-cultural traditions can thus be rejected.
- Fisheries governance practices (which include the actions of fisheries governors such as the Ministry of Fisheries and Coastal Affairs, the Sami Parliament and fishers' associations) as well as Sami rights mapping practices tend to enact an image of Sami culture as uniform and having the same needs and challenges independent of social and ecological contexts, which is materialized in universal solutions to the whole population in the Sami settlement area.
- In the context of ecosystem governance, knowledge about Sami culture is produced through collection and integration of local knowledge and mapping of marine biodiversity in general. Current ethno-ecological governance mapping practices offer an image of Sami culture as an extra valuable layer mixed together with certain forms of biodiversity. This enacts Sami seascapes not as constituted by ethno-cultural practices, but as vulnerable and valuable ethno-ecological spaces to be protected from environmental threats. Consequently, the hypothesis that the production of specifically Sami governable spaces are facilitated through ecosystem mapping practices can be questioned.

- It can be argued that this development facilitates the emergence of multiple local biodiversities, but less cultural and social biodiversity. What is produced instead, is increasingly ethno-ecological seascapes constituted by the material and discursive practices of ethno-ecological assemblages, that may express ecological interests and arguments associated with their importance for Sami culture.

Through this thesis, I have argued that the integration of Sami interests in marine governance is organized in an increasingly ethno-ecological governance approach. This approach opens up for new ways of understanding why and how marginal and special interests are expressed in environmental conflicts. In general, the thesis has argued that ethno-ecological identities are emerging as increasingly relevant for the overall governance of the environment, facilitated by new principles for the sustainable development of the environment and democratic inclusion of marginalized groups in resource governance. These processes however tend to ignore cultural diversity and alternative knowledge produced by others than central governance institutions. Attention to ethno-ecological relations and local knowledge production, as opposed to attention to universal solutions and centralized production of local knowledge is pointed to as remedial actions for policy and research practices. Ultimately, the development described in this thesis indicates that Sami culture increasingly matters and is materialized through its alliance with ecology.

Endnotes

- ¹ These principles are also reflected in international landscape protection frameworks, where seascapes are conceptualised as the result of interactions between humans and the seascape. The International Union for Conservation of Nature (IUCN) Protected Areas Categories System is in this respect widely used as guiding principles for the definition and construction of protected and significant areas. Category V Protected Landscape/Seascape is defined as an
‘area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area’ (United Nations Environment Programme).
- ² Olsen (2010) explains the lack of attention to material culture with general turns in social science research practices, which saw material culture only as items through which things were represented, and not as having particular value in themselves. He calls for a return to things, where material culture is seen as actors that do history together with, instead of apart from, humans (ibid.).
- ³ The word ‘matter’ is ambiguous, implying both how Sami culture is materialized, and its social meaning and importance in resource governance. Barad (2003) points out how materiality is an active factor in processes of materialization, and that ‘it is vitally important that we understand how matter matters’ (Barad 2003:85).
- ⁴ These are connected to ongoing Sami rights mapping processes initiated by the Alta affair in the early 1980s. The Alta affair was an event that changed Norwegian policies towards the indigenous Sami people in Norway, which started as an environmental protest against hydroelectric development of the Alta river in West Finnmark. The historian Henry Minde describes the following decades of incorporation of human rights principles into Norwegian law as a ‘silent revolution (Minde 2003). Research on Sami rights to land and water in their traditional settlement areas have since been one of the major ongoing land use investigations in Norway. Regarding the right to fish in salt water, fishing rights for the Sami and Norwegian population of Finnmark County in general was researched by the Coastal Fishing Commission (NOU 2008:5). Central principles regarding governance of land and water in Sami areas are extensively investigated through numerous reports on Sami historical use of land and water in Sami areas in Norway, particularly NOU 1997:4, NOU 2001:34, and NOU 2007:13 and 14.
- ⁵ The mapping is done to accommodate ecosystem governance of all living marine resources as instituted by the Marine Resource Act (MRA) of 2009. The Act establishes marine protected areas (MPAs) as a follow-up of the Convention on Biological Diversity, relating to the IUCN protection categories. The Norwegian MPAs are however designed not to protect the seascape as formed through human interaction, but to preserve a representative selection of marine habitats and ‘maintain the subsea landscape – or seascape – and the range of species that live on or associated with it’ (Skjoldal 2005).
- ⁶ The administrative area for Sami language covers municipalities where the municipality boards have committed to a bilingual language policy, meaning that Sami and Norwegian are the official languages in public administration and education. Kåfjord and

Porsanger joined the area in 1992, and Porsanger has included the Kven language as part of its trilingual language policy since the turn of the century. The Sami administrative area includes municipalities that are eligible for financial support from the Sami Parliament's budget for small-scale industries development. The area also constitutes a Sami statistical area of analysis in yearly Sami statistical reports (the STN area), which defines the extent of what is considered Sami settlement areas. The southernmost municipality in this area is in southern Norway close to Røros, but this thesis only concentrates on the coastal Sami area that covers large areas in northern Norway (Statistics Norway, available at www.ssb.no/samer).

- ⁷ Although this thesis does not follow the methods recommended in grounded theory, many of the methods and approaches discussed in grounded theory research are common to how problems are approached and attempted to be solved in qualitative social science.
- ⁸ Nvivo 9 is software designed to help with analysis of qualitative data. Coding of interviews in the Fávllis project were done according to pre-decided categories such as social-ecological periods and events in the social-ecological history of the Porsanger fjord, in addition to letting categories emerge from the interviews (Glaser and Strauss 1977). A similar approach was not taken for the Lyngen fjord, where the focus was more specifically on spatial use patterns and conflicts.
- ⁹ Without going too far into post-constructivist approaches such as actor-network theory (ANT) and material semiotics (Law 1999; Latour 1993, 1999; Callon and Law 1997), it suffices here to say that the contribution of these theoretical approaches to the study of Sami seascapes is to open up the possibility that the seascapes can be materialized, represented and enacted as multiple ontological objects. For instance, fishing grounds range from being places to find fish, to calculable territories (Hannah 2009) to biodiversity areas (paper 5) through mapping processes.
- ¹⁰ Fávllis is a Sami word referring to a deep and open part or fishing area in the sea, as opposed to a shallow fishing ground. It was a multi-year Sami fisheries research network organized by the Centre for Sami Studies at the University of Tromsø (see figure 1), supported by the Research Council of Norway (2008 – 2012).
- ¹¹ I undertook a training program through ESRI to teach myself ArcGIS to a beginner's level. I am thankful to the University of Tromsø and the Center for Sami Studies who facilitated the software and licences required to undertake the program and continue to use ArcGIS during the course of the PhD period.
- ¹² The video can be accessed by entering 'Mapping Fishers' Activities' into the search field on www.youtube.com [Accessed 01.05.2012].
- ¹³ Fishers can fish in both an open access group and with individual quotas independent of their registry in the fishers' registry as A (part time) or B (full time) fishers.
- ¹⁴ This includes easier access for fishers to register as a fisher in the municipalities eligible for financial support from the Sami Parliament (Forskrift om manntal for fiskarar of fangstmenn 2008, § 3-6).
- ¹⁵ See the Akwe:Kon guidelines and the Nagoya protocol established as a result of Article 8j of the Convention on Biological Diversity (TKIP Portal, Secretariat of the Convention on Biological Diversity, 2012).
- ¹⁶ Coastal cod north of 62 degrees is on the list of species that are endangered in Norway.
- ¹⁷ Management of cod north of 62 degrees north in Norway is divided in three different stocks: the Northeast Arctic Cod (NEAC), Coastal Cod (NCC) and Murman cod. The two latter are treated as bulks with a fixed quota under the changing volume of the

overall cod quota set each year in negotiations between Norway and Russia. Thus the name ‘paper fish’.

- ¹⁸ The Consultation Agreement is an implementation of the principle of free, prior and informed consent instituted in the ILO Convention no. 169, ratified by Norway in 1990. The Agreement is a protocol for how consultations between state bodies and the Sami Parliament are to be conducted, and pertains to issues of importance to Sami culture in a designated Sami administrative area in Norway. This is the counties Finnmark, Troms, Nordland and Nord-Trøndelag; the municipalities of Osen, Roan, Åford, Bjugn, Rissa, Selbu, Meldal, Rennebu, Oppdal, Midtre Gauldal, Tydal, Holtåsen, and Røros in Sør-Trøndelag County; Engerdal, Rendalen, Os, Tolga, Tynset, and Follidal municipalities in Hedmark County; Surnadal and Rindal municipalities in Møre og Romsdal County (Consultation Agreement (2005)).
- ¹⁹ I am indebted to my colleague Signe Annie Sønvisen, who characterizes the increased focus on ethnicity in the general debate about the societal usefulness of fisheries since 2006, when the Coastal Fishing Commission was appointed, as an ‘ethnic turn’ in fisheries recruitment discourses.
- ²⁰ Ministry of Fisheries and Coastal Affairs (2011) ‘Forskrift av 15. desember 2011 om regulering av torsk, hyse og sei nord for 62 grader’ §20. This rule allocates an additional quota in cod, saithe and haddock fisheries as a result of consultations with the Sami Parliament to owners of licenced vessels in Finnmark, northern Troms and other municipalities in Troms and Nordland that are included in the Sami administrative area.
- ²¹ Principle 22 of the Rio Declaration, Preambles, Articles 8 and 10 of the Convention on Biological Diversity, and Chapter 26 of Agenda 21.
- ²² The Convention on Biological Diversity article 8 is among the primary policy guidelines for this movement. The article encourages states to promote the protection of ecosystems, and establish a network of marine protected areas. In article 8j, it encourages states to “respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity”. The Convention was signed at the 1992 Rio Earth Summit and is signed by 150 government leaders.
- ²³ EAFM is an approach to management that is perceived as more holistic, participatory and inclusive of both a multitude of species and factors in the ecosystem as well as a variety of stakeholders’ views, as opposed to a traditional single-stock management approach. An EAFM approach entails among other things including a ‘sub-set of important related issues’ to stock management, such as impact of fishing on the sea bottom and corals, by-catch of marine mammals and birds, and so on (Wilson 2009:174, 167).
- ²⁴ This is for instance implemented in the Directorate of Fisheries’ ‘Species Table’ which identifies the management responsibility of the authorities, where Sami interests are added to certain species in the comments field (Directorate of Fisheries 2012).
- ²⁵ The full Norwegian title: Lov om forvaltning av naturens mangfold (naturmangfoldloven) av 19. juni nr 100. It came into force 1 July 2009. The translations are by the author.
- ²⁶ The full Norwegian title: Lov om forvaltning av viltlevande marine ressursar (havressurslova) av 6. juni 2008. It came into force 1 January 2009. The translations are by the author.
- ²⁷ The short videos on Porsanger can be accessed through the Fávllis research network home page or entering user ‘9videot’ in the search field on www.youtube.com [Accessed 02.05.2012].

-
- ²⁸ This is also the solution of many science and technology studies (STS) scholars, where the approach is to emphasize the heterogeneous character of science cultures or assemblages (Law 1991; Deleuze and Guattari 1987) as opposed to the ‘standard’ image of science as universal and uniform. This has the effect of opening up for alliances between knowledges, meaning that all knowledge, although produced differently, share a common characteristic in their localness (Verran-Watson and Turnbull 1995:116).
- ²⁹ The term regulatory implies that knowledge is produced to develop truths relevant to policy and not to answer to theoretical propositions (Jasanoff 1987).
- ³⁰ Since there is no fish farming in the Porsanger fjord, the contrast between fishing areas and other marine use forms are not as pronounced as in the Lyngen and Alta fjords, resulting in different political issues being raised in the different contexts. In Porsanger, there has been an increasing scientific knowledge production and mapping of marine biodiversity and local cod stocks (Larsen 2010) among other things due to the Institute of Marine Research’s attention to the impact of king crabs and seals in the system (Sunnanå pers.comm). This has however not been the focus of this thesis.
- ³¹ Irwin and Michael (2003) uses the term ethno-epistemic assemblages, meaning groups of alliances between science and the public that are ‘locally situated, have more or less well-delineated identities (through drawing on global flows of knowledge and culture) and are, crucially, involved in the ‘establishment’ of knowledge and the production of knowledge claims’ (ibid. p. 85). The term ethno-ecology is also sometimes used about traditional ecological knowledge. For the present purposes, the science border, although relevant, is not as important as the emergence of ways of arguing and creating social action that expresses a group’s identity as connected to certain environments. The term ‘assemblage’ means here that ecological identities are not tied exclusively to ethnic groups, but may consist of groups of fishers, scientists, fisheries managers, journalists, and politicians, who together form such assemblages. An example of an ethno-ecological assemblage is ‘Group 1’ that was formed relative to the monster cod controversy in paper 4, which included Sami organizations, some newspapers, political parties, branches of the Directorate of Fisheries, and a majority of the small-scale fishers in Storfjord. Where claims such as the age-old character of fishers’ knowledge and the importance of local cod stocks were previously argued by Sami fishers, they are now official policy, at least in the context of cod farming in Norwegian/Sami fjords.
- ³² Barth in his book ‘Ethnic groups and boundaries’ (1969) defines ethnicity as the social organization of cultural difference, where ethnicity is seen as people’s basic identity that governs social interaction. The coastal Sami culture is described as an ethnic group that maintains cultural and ethnic unity over time despite occupying several ecological niches (ibid. p 13). The view on ethnicity taken here implies that people can have multiple identities, and that ethnic identity is not as important as ethno-ecological politics in governing social action in coastal Norway.

References

- Alvesson, M. and K. Skoldberg (2009). *Reflexive methodology: New vistas for qualitative research*, Sage publications ltd.
- Andersen, S. (2011). *Den gang var det jo rikelig med fisk. Lokal kunnskap fra Porsanger og andre fjorder*, Sjøsamisk kompetansesenter.
- Barad, K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. *Signs*, 28 (3), pp.: 801-831.
- Barbash, I. and L. Taylor (1997). *Cross-cultural filmmaking*. Berkeley and Los Angeles, California: University of California Press.
- Barth, F. (1969). *Introduction in Ethnic Groups and Boundaries: the Social Organization of Cultural Difference*, London.
- Basso, K. H. (1996). *Wisdom sits in places: Landscape and language among the Western Apache*, Univ of New Mexico Pr.
- Bennett, D. and A. Bennett (2004). The rise of the knowledge organization. *Handbook on knowledge management: Knowledge matters*. C. W. Holsapple, Springer-Verlag New York Inc. 1.
- Berkes, F. (1999). *Sacred ecology: traditional ecological knowledge and resource management*. Philadelphia, Taylor & Francis.
- Bjørklund, I. (1991). Property in Common, Common Property or Private Property: Norwegian Fishery Management in a Sami Coastal Area. *North Atlantic Studies*, 3 (1), pp.: 41-45.
- Brattland, C. (2005). *Fishing under the consent of the Kingdom : from local requests to indigenous claims in a coastal Sami fjord*. Tromsø, C. Brattland.
- Brattland, C. (2009). *From Local Requests to Indigenous Claims. A study on the development of coastal Sami rights discourses in the Lyngen region*, VDM Verlag Dr. Müller Aktiengesellschaft & Co. KG.
- Brattland, C. (2010). Mapping Rights in Coastal Sami Seascapes. *Arctic Review on Law and Politics*, 1 (1), pp.: 28-53.

- Brattland, C. and S. Nilsen (2011). Reclaiming Indigenous Seascapes. Sami Place Names in Norwegian Sea Charts. *Polar Geography*, 34 (4), pp.: 275-297.
- Brody, H. (1983). Maps and dreams: A journey into the lives and lands of the Beaver Indians of Northwest Canada, New York: Penguin Books.
- Brox, O. (1969). *Hva skjer i Nord-Norge?* Pax Forl.
- Callon, M. (1986). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen. Power, Action and Belief: A New Sociology of Knowledge. *J. Law. London, Routledge & Kegan*, pp.
- Callon, M. and J. Law (1997). After the individual in society: Lessons on collectivity from science, technology and society. *Canadian Journal of Sociology/Cahiers canadiens de sociologie*: 165-182.
- Cash, D. W., W. C. Clark, et al. (2002). *Saliency, credibility, legitimacy and boundaries: Linking research, assessment and decision making*, Research Programs, John F. Kennedy School of Government, Harvard University.
- Center for Sami studies (2012): Learning hoavda's seascape. Fávllis – samisk fiskeriforskningsnettverk. University of Tromsø.
- Chapin, M., Z. Lamb, et al. (2005). Mapping indigenous lands. *Annu. Rev. Anthropol.*, 34 pp.: 619-638.
- Consultation Agreement 2005. Konsultasjonsplikt i samiske saker. 'Prosedyrer for konsultasjoner mellom statlige myndigheter og Sametinget'. Fornyings, administrasjons- og kirkedepartementet. Oslo.
- Convention on Biological Diversity (1993), UN; UNEP
- Cultural Heritage Act (1978). <http://www.lovdatabasen.no/all/hl-19780609-050.html> [Accessed 01.05.2012].
- Davis, A. and S. Jentoft (2001). The challenge and the promise of indigenous peoples' fishing rights--from dependency to agency. *Marine Policy*, 25 (3), pp.: 223-237.
- Davis, A., D. MacInnes, et al. (1991). *Social research and public policy formation in the fisheries : Norwegian and Canadian experiences : proceedings of an international working seminar held at the Institute of Fisheries, University of Tromsø, Tromsø, Norway, June 16-20, 1986*. Halifax, N.S., Oceans Institute of Canada.

- Davis, A. and J. R. Wagner (2003). Who knows? On the importance of identifying “experts” when researching local ecological knowledge. *Human Ecology*, 31 (3), pp.: 463-489.
- Deleuze, G. and F. Guattari (1987). *A thousand plateaus: Capitalism and schizophrenia*, Univ Of Minnesota Press.
- Directorate for Nature Management 2007: Kartlegging av marint biologisk mangfold. DN-håndbok 21-2001. Revidert 2007. Direktoratet for naturforvaltning.
- Directorate of Fisheries 2012. En praktisk tilnærming til en økosystembasert fiskeriforvaltning. <http://www.fiskeridir.no/fiske-og-fangst/forvaltningsprinsippet>. [Accessed 02.05.2012].
- Drivenes, E.-A., M. A. Hauan, et al. (1994). *Nordnorsk kulturhistorie*. Oslo, Gyldendal.
- Escobar, A (1998). Whose knowledge, whose nature? Biodiversity, conservation and the political ecology of social movements. *Journal of Political Ecology*. Vol. 5 1998.
- Eythorsson, E. (1993). Sami fjord fishermen and the state: traditional knowledge and resource management in northern Norway. *Traditional Ecological Knowledge: Concepts and Cases*, pp.: 132–142.
- Eythorsson, E. (2008). *Sjøsamene og kampen om fjordressursene*. Karasjok, CálliidLágádus.
- Eythórsson, E. (2003). The coastal Sami: a ‘pariah caste’ of the norwegian fisheries? a reflection on ethnicity and power in Norwegian resource management’. *Indigenous Peoples: Resource Management and Global Rights, Eburon Academic, Delft, The Netherlands*, pp.: 149-162.
- Food and Agriculture Organization of the United Nations (FAO 2011). Voluntary Guidelines on Securing Sustainable Small-Scale Fisheries [VG-SSF]. <http://www.fao.org/fishery/ssf/guidelines/en>. [Accessed 02.05.2012].
- Felt, L. (1994). Two tales of a fish: The social bases of indigenous knowledge among commercial Atlantic salmon fisheries. *Folk management of the world’s fisheries*, pp.: 251–286.
- Felt, L. and B. Neis (2000). *Finding Our Sea Legs: Linking Fishery People and Their Knowledge with Science and Managaement*, ISER Books.

- Freeman, M. M. R. (1976). *Inuit land use and occupancy project: a report*, Supply and Services Canada.
- Glaser, B. G. and A. L. Strauss (1977). *The discovery of grounded theory: Strategies for qualitative research*, Aldine Publ.
- Guttorm, G. (2011). Árbiediehtu (Sami traditional knowledge) - as a concept and in practice. *Working with traditional knowledge: communities, institutions, information systems, law and ethics*. J. Porsanger and G. Guttorm. Guovdageidnu, Dieđut, Sámi Allaskuvla. **1**.
- Haas, P. (2004). When does power listen to truth? A constructivist approach to the policy process. *Journal of European Public Policy*, 11 (4), pp.: 569-592.
- Hannah, M. G. (2009). Calculable territory and the West German census boycott movements of the 1980s. *Political Geography* 28(1): 66-75
- Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist studies*, 14 (3), pp.: 575-599.
- Hardin, G. (1968). The tragedy of the commons. *Science* pp. 162:1243-1248
- Harley, J. B. (1989). Deconstructing the map. *Cartographica: The International Journal for Geographic Information and Geovisualization*, 26 (2), pp.: 1-20.
- Harley, J. B. and P. Laxton (2001). *The new nature of maps*, "The" Johns Hopkins Univ. Press.
- Healey, S. (2009). Ethno-Ecological Identity and the Restructuring of Political Power in Bolivia. *Latin American Perspectives*, 36 (4), pp.: 83-100.
- Helander, K. R. (2009). Toponymic Silence and Sámi Place Names during the Growth of the Norwegian Nation State. *Critical Toponymies*. L. D. Berg and J. Vuolteenaho. Farnham, Ashgate.
- Henriksen, T. (2010). The greening of Norwegian fisheries legislation. *Arctic Review on Law and Politics*, 1 pp.
- Hersoug, B. (2005). *Closing the commons: Norwegian fisheries from open access to private property*. Delft, Eburon.
- Hersoug (2008). Retts- og forvaltningsforhold andre steder. In NOU 2008:5 Retten til fiske i havet utenfor Finnmark. Oslo.

- Holm, Petter, Stein Arne Rånes and Bjørn Hersoug, 1998. 'Creating Alternative Natures: Coastal Cod as Fact and Artefact.' In D. Symes (ed.) *Northern Waters: Management Issues and Practice*: 79-89. Oxford: Fishing News Books.
- Holm, P. (2003). Crossing the Border: On the relationship between science and fishermen's knowledge in a resource management context. *Maritime Studies*, 2 (1), pp.: 5-33.
- Hovland, A. (1999). *Moderne urfolk: lokal og etnisk tilhørighet blant samisk ungdom*. Oslo, Norsk institutt for forskning om oppvekst, velferd og aldring.
- Huntington, H. P. (2000). Using traditional ecological knowledge in science: methods and applications. *Ecological Applications*, 10 (5), pp.: 1270-1274.
- Ingold, T. (2000). *The perception of the environment: essays on livelihood, dwelling and skill*, Psychology Press.
- Irwin, A. and M. Michael (2003). *Science, social theory and public knowledge*, Open University Press.
- Jasanoff, S. S. (1987). Contested boundaries in policy-relevant science. *Social Studies of Science* 17(2): 195-230.
- Jentoft, S. (1993). *Dangling lines : the fisheries crisis and the future of coastal communities : the Norwegian experience*. St. John's, Nfld., Memorial University of Newfoundland, Institute of Social and Economic Research.
- Jentoft, S. (1998). The Comedy of the Commons. *Co-management in Fisheries and Reindeer Husbandry, Ad Notam Gyldendal, Oslo*, pp.
- Jentoft, S. (1998). *Commons in a cold climate : coastal fisheries and reindeer pastoralism in North Norway : the co-management approach*. Paris New York, Unesco, Parthenon.
- Jentoft, S. (2000). *Rights to nature - a natural right? : fisheries management from a Saami perspective*.
- Jentoft, S. (2008). Marine Resource Management and Social Justice from the Perspective of Indigenous Peoples. *Indigenous Peoples: Self-Determination, Knowledge, Indigeneity*. H. Minde. Delft, Eburon.
- Jentoft, S. and C. Brattland (2011). Mot en samisk fiskeriforvaltning? . *Hvor går Nord-Norge? Tidsbilder fra en landsdel i forandring*. S. Jentoft, J.-I. Nergård and K. A. Røvik. Stamsund, Orkana.

- Jentoft, S. and R. Chuenpagdee (2009). Fisheries and coastal governance as a wicked problem. *Marine Policy*, 33 (4), pp.: 553-560.
- Jentoft, S., R. Chuenpagdee, et al. (2010). Pyramids and roses: alternative images for the governance of fisheries systems. *Marine Policy*, 34 (6), pp.: 1315-1321.
- Jentoft, S., A. Eide, et al. (2011). *Poverty mosaics: realities and prospects in small-scale fisheries*. Dordrecht, Springer.
- Jentoft, S. and K. H. Mikalsen (1994). Regulating fjord fisheries : folk management or interest group politics? *Folk management in the world's fisheries*. C. L. Dyer and J. R. McGoodwin. Colorado, Colorado University Press: 38 s.
- Johnsen, J. P., P. Holm, et al. (2009). The Cyborgization of the Fisheries: on Attempts to Make Fisheries Management Possible. *MAST*, 7 (2), pp.
- Jones, M. (2006). Landscape, law and justice—concepts and issues. *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography*, 60 (01), pp.: 1-14.
- Jones, M. (2008). The “Two Landscapes” of North Norway and the “Cultural Landscape” of the South. *Nordic landscapes: region and belonging on the northern edge of Europe*, pp.: 283.
- Jones, Michael og Schanche, Audhild (eds.): *Landscape, Law and Customary Rights, Dieđut* nr. 3/2004, Guovdageidnu, Sámi Instituhtá. 190 pages.
- Kalland, A. (2003). Environmentalism and images of the other. *Nature across Cultures: Views of Nature and the Environment in Non-Western Cultures*, pp.: 1–18.
- Kalstad, J. A. (2010). *Fiske, fangst og tradisjonell kunnskap i indre Varanger*. Tromsø, Tromsø museum.
- Keskitalo, A. I. (1994). Research as an inter-ethnic relation. Paper delivered at the Seventh Meeting of Nordic Ethnographers held at Tromsø Museum in Tromsø, Norway 29 August 1974, Guovdageidnu [Kautokeino], Sámi instituhtta.
- Kirsch, S. (2002). Anthropology and Advocacy. *Critique of Anthropology*, 22 (2), pp.: 175-200.
- Kitchin, R. and M. Dodge (2007). Rethinking maps. *Progress in Human Geography*, 31 (3), pp.: 331-344.

- Knol, M. (2010). Marine ecosystem governance in the making: planning for petroleum activity in the Barents Sea-Lofoten area. [Tromsø], University of Tromsø, Faculty of Biosciences, Fisheries and Economics: 1 b. (flere pag.).
- Knorr-Cetina, K. (1999). *Epistemic cultures: How the sciences make knowledge*, Harvard Univ Pr.
- Kolsrud, K. (1955). The Sea Lapps of Rognsund (Summary). *Lapp female deities of the Madder-akka group*. Oslo, Aschehoug: S. 174-182.
- Kooiman, J. (2005). *Fish for life: interactive governance for fisheries*, Amsterdam Univ Pr.
- Larsen, T. H. (2010). Population dynamics of cod, *Gadus morhua*, in Porsangerfjord, Northern Norway: analysis of back-calculated length at age from otoliths in 1992 and 2009. Master thesis. Tromsø, University of Tromsø.
- Latour, B. (1993). *We have never been modern*, Harvard Univ Pr.
- Latour, B. (1999). *Pandora's hope: essays on the reality of science studies*, Harvard Univ Pr.
- Law, J. (1991). *A sociology of monsters: Essays on power, technology, and domination*, Psychology Press.
- Law, J. and J. Urry (2004). Enacting the social. *Economy and society*, 33 (3), pp.: 390-410.
- Lillevoll, T. A. (1998). Open Commons for Fjord Fishery in Coast Saami Areas? *Commons in a cold climate*. S. Jentoft. Paris New York: Unesco Parthenon, Man and the biosphere series. 22: 121-144.
- MacDougall, D. and L. Taylor (1998). *Transcultural cinema*, Princeton Univ Pr.
- Marine Resource Act (2009): Act relating to the management of wild living marine resources. Oslo: Ministry of Fisheries and Coastal Affairs.
- Maurstad, A., P. Holm, et al. (1992). *Fra økonomisk rasjonalitet til økologisk kompetanse : samfunnsvitenskapelig forskning om lokale fiskerisamfunn*. Tromsø, Norges fiskerihøgskole.
- Maurstad, A. (1997). *Sjarkfiske og ressursforvaltning*. [Tromsø], [Institutt for samfunns- og markedsfag, Norges fiskerihøgskole, Universitetet i Tromsø].

- Maurstad, A. and J. H. Sundet (1998). The invisible cod—fishermen's and scientists' knowledge. *Commons in a Cold Climate. Coastal Fisheries and Reindeer Pastoralism in North Norway: the Co-management Approach*, pp.: 167–184.
- Maurstad, A (2002): Tradisjonelt fiske og oppdrettsanlegg. Nye arealkonflikter på fjordene. In Andersen, Svanhild (red.): *Samiske landskap og Agenda 21: kultur, næring, miljøvern og demokrati*, *Dieđut* nr. 1/2002 Guovdageidnu, Sámi Instituhtá pp. 67-79, 12
- Maurstad, A. (2004). Cultural seascapes: preserving local fishermen's knowledge in Northern Norway. Northern ethnographic landscapes: perspectives from circumpolar nations. Washington, D.C, Arctic Studies Center, National Museum of Natural History, Smithsonian Institution in collaboration with the National Park Service: S. 277- 297.
- Meløe, J. (1988). The two landscapes of northern Norway. *Inquiry*, 31 (3), pp.: 387-401.
- Merton, R. K. and P. Sztompka (1996). *On social structure and science*, University of Chicago Press.
- Minde, H., R. Nilsen, et al. (2003). *Indigenous peoples : resource management and global rights*. Delft, Eburon.
- Ministry of Fisheries and Coastal Affairs 2004. Aquaculture regulations. Forskrift om tillatelse til akvakultur av andre arter enn laks, ørret og regnbueørret. Oslo: Fiskeri- og kystdepartementet. Sist endret 2010.
- Ministry of Fisheries and Coastal Affairs (2011) 'Forskrift av 15. desember 2011 om regulering av torsk, hyse og sei nord for 62 grader'.
- Ministry of Fisheries and Coastal Affairs 2012: Prop. 70 L. (2011-2012). Proposisjon til Stortinget (forslag til lovvedtak). Endringer i deltakerloven, havressurslova og finnmarksloven (kystfiskeutvalet). Fiskeri- og kystdepartementet. Oslo.
- Mol, A. P. J. (2006). Environmental governance in the Information Age: the emergence of informational governance. *Environment and Planning C: Government & Policy*, 24 (4), pp.: 497-514.
- Murray, G., B. Neis, et al. (2008). Mapping cod: fisheries science, fish harvesters' ecological knowledge and cod migrations in the northern Gulf of St. Lawrence. *Human Ecology*, 36 (4), pp.: 581-598.
- Nadasdy, P. (1999). The politics of TEK: Power and the "integration" of knowledge. *Arctic Anthropology*, pp.: 1-18.

- Nature Diversity Act (2009): Act of 19 June 2009 No. 100 Relating to the Management of Biological, Geological and Landscape Diversity (Nature Diversity Act). Oslo: Norwegian Ministry of the Environment.
- Neis, B., L. F. Felt, et al. (1999). An interdisciplinary method for collecting and integrating fishers' ecological knowledge into resource management. *Fishing places, fishing people: traditions and issues in Canadian small-scale fisheries*, pp.: 217-238.
- Neis, B. and R. Kean (2003). *Why Fish Stocks Collapse: An Interdisciplinary Approach to the Problem of 'Fishing Up'*. Toronto, University of Toronto Press.
- Niemi, Einar (2002): "Kategoriernes etikk og minoritetene i nord: Et historisk perspektiv", i *Samisk forskning og forskningsetikk*. Forskningsetiske komiteers skriftserie, nr. 2/2002. Oslo: Forskningsetiske komiteer, ss. 22-44
- Nilsen, R. (1998). *Fjordfiskere og ressursbruk i nord*. Oslo, Ad notam Gyldendal.
- Nilsen, R. (1998a). The Coastal Survivors - Industrialization, Local Adaptations and Resource Management in the North Norwegian Fisheries. *Commons In a Cold Climate*. S. Jentoft. Paris New York: Unesco Parthenon, UNESCO. Man and the Biosphere series vol. 22.
- Directorate of Fisheries 2012. Statistikk. Source: www.fiskeridir.no [Accessed 01.04.2012]
- NOU 1997:4 Naturgrunlaget for samisk kultur, Justis- og beredskapsdepartementet, Oslo [Norwegian Official Report NOU 1997:4 The natural basis for Sami culture].
- NOU 2001:34 *Samiske sedvaner og rettsoppfatninger*. Justis- og Politidepartementet, Oslo. [Norwegian Official Report 2001:34 *Sami customs and rights perceptions*].
- NOU 2005:10. Lov om forvaltning av viltlevende marine ressurser. Havressursloven. Fiskeri- og kystdepartementet, Oslo. [Norwegian Official Report 2005:10 Act on the management of living marine resources. Ministry of Fisheries and Coastal Affairs, Oslo].
- NOU 2007: 13 *Den nye sameretten*, Justis- og politidepartementet, Oslo. [Norwegian Official Report 2007:13 Sami Rights Commission].

- NOU 2007: 14 *Samisk naturbruk og rettsituasjon fra Hedmark til Troms*, Justis- og politidepartementet, Oslo. [Norwegian Official Report 2007:14 Sami Rights Commission].
- NOU 2008:5 *Retten til fiske i havet utenfor Finnmark*. Fiskeri- og kystdepartementet, Oslo. [Norwegian Official Report 2008:5 The Right to Fish in the Sea off Finnmark. Oslo: Ministry of Fisheries and Coastal Affairs
- Olsen, B. (2010). *In defense of things: archaeology and the ontology of objects*, Altamira Pr.
- Olsson, P. and C. Folke (2001). Local ecological knowledge and institutional dynamics for ecosystem management: a study of Lake Racken watershed, Sweden. *Ecosystems*, 4 (2), pp.: 85-104.
- Onyango, P. O. (2011). *Poverty alleviation in small-scale fisheries: governance challenges in Lake Victoria fishing communities, Tanzania*. Tromsø, University of Tromsø, Faculty of Biosciences, Fisheries and Economics, Norwegian College of Fishery Science.
- Paine, R. (1957). *Coast Lapp society*. Tromsø, Tromsø museum.
- Paine, R. (1990). Advocacy and Anthropology. *American Anthropologist*, 92 (3), pp.: 742-743.
- Parajuli, P. (1996). Ecological ethnicity in the making: Developmentalist hegemonies and emergent identities in India. *Identities Global Studies in Culture and Power*, 3 (1-2), pp.: 14-59.
- Parajuli, P. (2004). Revisiting Gandhi and Zapata: Motion of global capital, geographies of difference and the formation of ecological ethnicities. *In the way of development: Indigenous peoples, life projects, and globalization*, pp.: 235-255.
- Planning and Building Act (2008). Lov om planlegging og byggesaksbehandling (Plan-og bygningsloven). Entered into force 27th of June 2008.
- Porsanger, J. (2011). The problematisation of the dichotomy of modernity and tradition in indigenous and Sami contexts. *Working with traditional knowledge: communities, institutions, information systems, law and ethics*. J. Porsanger and G. Guttorm. Guovdageidnu, Diedut. 1.
- Rose-Redwood, R., D. Alderman, et al. (2010). Geographies of toponymic inscription: new directions in critical place-name studies. *Progress in Human Geography*, 34 (4), pp.: 453.

- Rt 1985 p. 247. "Kaafjorddommen" in *Norsk Rettstidende*. [Supreme Court of Norway decision 1985].
- Sami Parliament 2004. Sametingets fiskerimelding. Sametinget, Karasjok.
- Sami Parliament 2010. Planveileder. Sametinget, Karasjok
- Scott, J. C. (1998). *Seeing like a state: How certain schemes to improve the human condition have failed*, Yale Univ Pr.
- Seljevold (2012): Det hadde vært godt med seimølja. Fávllis, University of Tromsø. <http://vimeo.com/36280365>. [Accessed 02.05.2012].
- Skjoldal, H. R. (2005). Marine Protected Areas in Norway, *Havforskningsnytt*.
- Smith, C. (1990). *Samiske interesser og fiskerireguleringer*. Oslo, Det Kongelige fiskeridepartement.
- Smith, C. (2010). Retten til fiske i havet utenfor Finnmark. *Arctic Review on Law and Politics*, 1 pp.
- Smith, L. T. (2005). *Decolonizing methodologies: Research and indigenous peoples*, Zed.
- Soto, C. G. (2006). Socio-cultural barriers to applying fisher's knowledge in fisheries management: an evaluation of literature cases. Vancouver, Simon Fraser University. PhD thesis.
- Statistics Norway. www.ssb.no [Accessed 02.05.2012].
- St. meld. nr. 55 (2000-2001). Om samepolitikken. Kommunal- og regionaldepartementet, Oslo.
- St Martin, K. (2001). Making space for community resource management in fisheries. *Annals of the Association of American Geographers*, 91 (1), pp.: 122-142.
- St Martin, K. and M. Hall-Arber (2008). The missing layer: Geo-technologies, communities, and implications for marine spatial planning. *Marine Policy*, 32 (5), pp.: 779-786.
- Søderholm, B. (2002). Forprosjekt. Porsangerfjorden tilbake til livet. Lakselv, Porsanger kommune

- Tobias, T. (2010). *Living Proof: The Essential Data-Collection Guide for Indigenous Use-and-Occupancy Map Surveys*. Vancouver, Ecotrust Canada and UBCIC.
- Toki, V. (2010). Indigenous peoples' fishing rights - a comparative perspective between Maori and Sami. *Arctic Review on Law and Politics*, 1 pp.
- TKIP Portal, Secretariat of the Convention on Biological Diversity, 2012. Traditional Knowledge Information Portal. <http://www.cbd.int/tk> [Accessed 01.05.2012]
- Watson-Veran, H. and D. Turnbull (1994). Science and other indigenous knowledge systems. *Knowledge: Critical Concepts*, pp.: 345-346.
- Wilson, D. C. (2010). *The paradoxes of transparency: science and the ecosystem approach to fisheries management in Europe*, Amsterdam Univ Pr.
- Yin, R. K. (2009). *Case study research: Design and methods*, Sage Publications, Inc.

Paper 1

Brattland, Camilla and Nilsen, Steinar (2011): Reclaiming indigenous seascapes. Sami place names in Norwegian sea charts. In *Journal of Polar Geography* 34 (4)

Gearretnjårgstáppat: the stallos on Trollholmen, Porsanger. Photo: Camilla Brattland.



Paper 2

Brattland, Camilla (manuscript): Overfishing and cyborgization in Sami fisheries. A case study of the use of traditional knowledge in small-scale fisheries in Porsanger, Norway. Submitted to *Maritime Studies (MAST)*



Fishing vessels in the Porsanger fjord. Photo by Camilla Brattland

En surimpression, sur la carte no. 32
Service Hydrographique de Norvège

- ○ Ligne de base arrêtée par royal du 12 Juillet 1935.
- Limite de pêche à 4 milles marins au delà de la ligne de base.
- - - - - La "Fished Green Line" limite
- Point de capture
- X Point de semence
- Alignement
- Parcelle de mer assignée aux NORVÉGIENS
- Parcelle de mer assignée aux NORVÉGIENS

Paper 3

Brattland, Camilla (2010): Mapping rights in coastal Sami seascapes. In *Arctic Review of Law and Politics* no. 1 vol. 1

Fishing ground names collected by Per Hovda for the Anglo-Norwegian Fisheries Case of 1951.

Photo by Bjørn Hatteng, Center for Sami Studies, University of Tromsø.

DEN NORSKE KYST

FRÅ SLETTNES TIL GRENSE JAKOBSELV

SHIPS GEOMETRISK OPPMÅLING

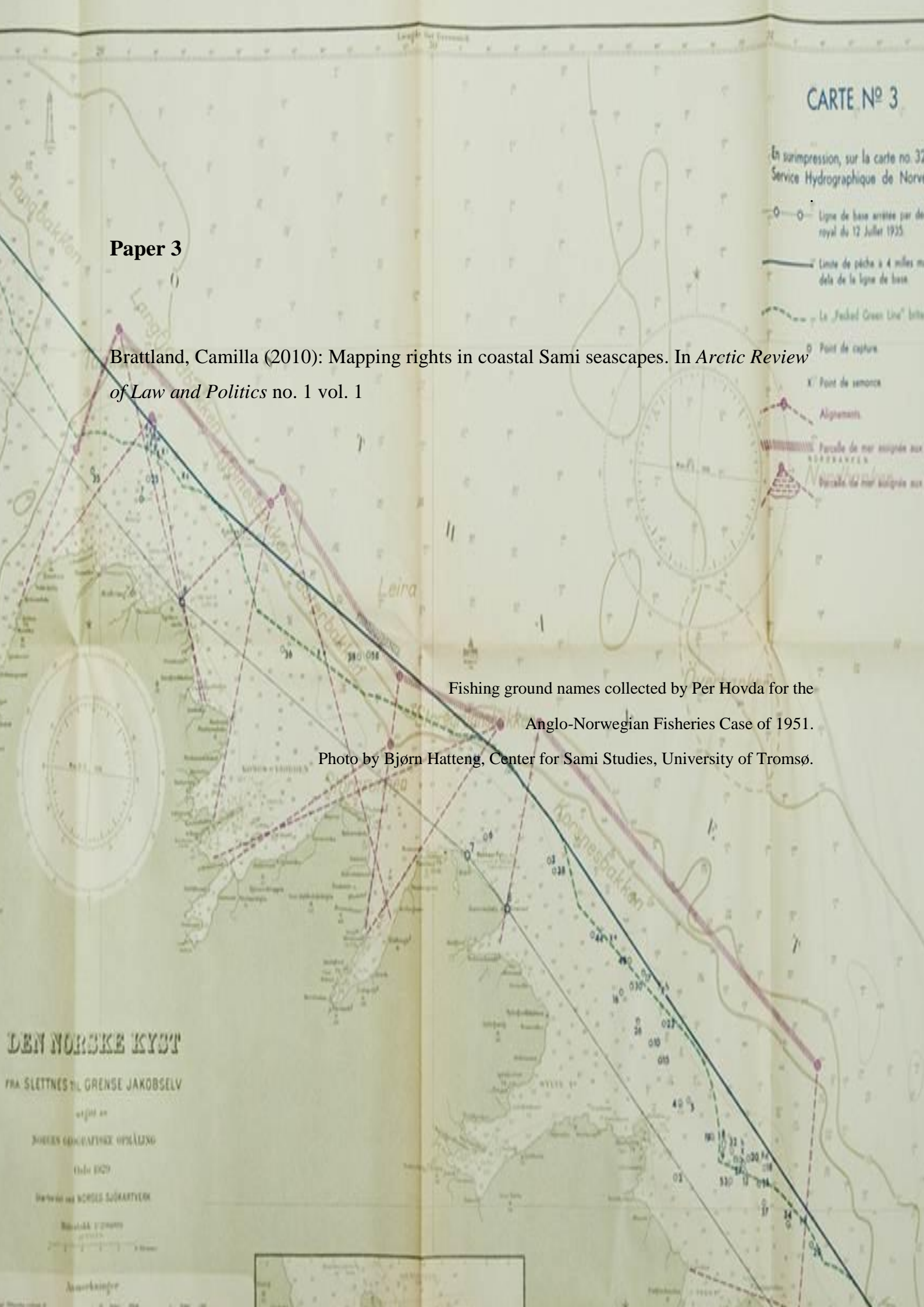
(1861-1927)

INSTRUMENTAL NORSKE SØKARTVERK

Skala 1:20000

0 1 2 3 4 5 6 7 8 9 10

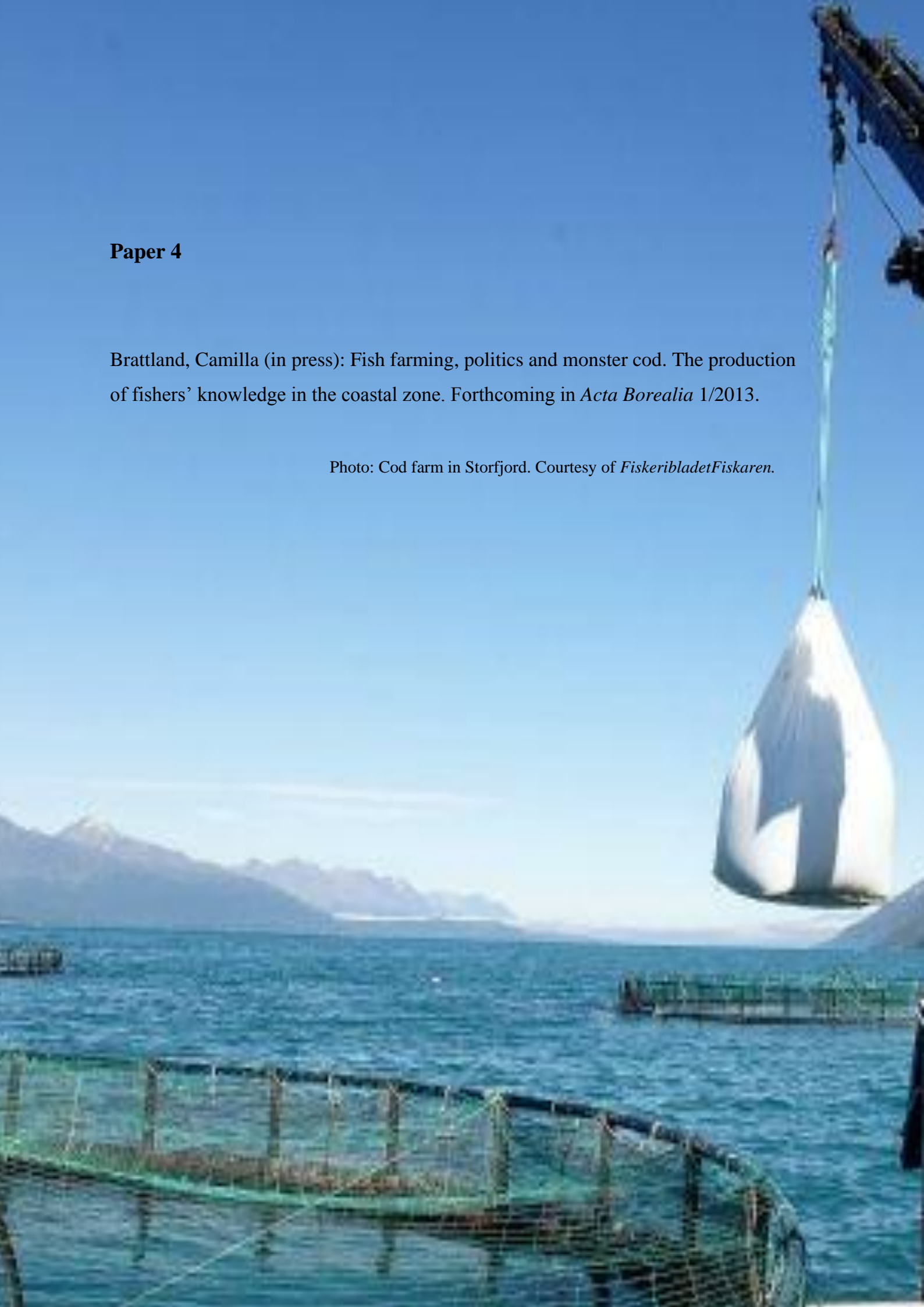
Auswertungen



Paper 4

Brattland, Camilla (in press): Fish farming, politics and monster cod. The production of fishers' knowledge in the coastal zone. Forthcoming in *Acta Borealia* 1/2013.

Photo: Cod farm in Storfjord. Courtesy of *FiskeribladetFiskaren*.



Ansgar Hansen in his boat. Photo by Camilla Brattland.

Paper 5

Brattland, Camilla (manuscript): Sami fishing grounds and the missing layers of the marine environment. Submitted to *Norsk Geografisk Tidsskrift – Norwegian Journal of Geography*.



Reni Wright attaching microphone to Torvald Joramo. Photo by Camilla Brattland

Ethnographic film

Wright, Reni and Brattland, Camilla (2012): Learning hoavda's seascape (10:36 min).
Norwegian title: Hoavda og skårungene. Wright kunnskapsformidling, Visual cultural studies and Centre for Sami Studies, University of Tromsø.



Learning hoavda's seascape.

Abstract

The film 'Learning hoavda's seascape' (10:36 min.) was made as one in a series of films about coastal Sami culture, to be used for teaching in primary and secondary schools ('Fisk, ull og rock'). It started as an attempt to document traditional knowledge in coastal Sami fjord fisheries. The film follows three fishers from Manndalen in Kåfjord, Troms, during one day in the end of March, 2009. The eldest fisher, Torvald (Toddis) Joramo, is growing too old to go to sea alone, and two men from his village are joining him at sea (Ansgar Hansen and Wilmar Johnsen). Torvald has fished with larger vessels and used other technologies than what he is using now to find fish and set gill nets in the fjord. Neither of these fishers are full-time fishers, and they pursue cod fishing only in the winter fishing season. The narrating voice of Ansgar Hansen in the local Gáivuotna Sami dialect tells the story of how 'hoavda' (the boss in Sami language) has taught them where and how to set the gill nets in order to catch cod. Norwegian and Sami language is used intermittently throughout the film. The film documents the social relationships among fjord fishers as well as the diverse materials and practices and in which knowledge is embedded.

Lead film maker: Reni Wright, Wright kunnskapsformidling.

E-mail: reni.wright@uit.no

The film was partly supported by the Center for Sami Studies, University of Tromsø, and is available at the University Library of Tromsø and the Fávllis research project webpages, Center for Sami Studies, University of Tromsø. University home page: www.uit.no [accessed May 1st, 2012].

